THEORETICAL ISSUES AT THE MORPHOLOGY-SYNTAX INTERFACE

AMAYA MENDIKOETXEA - MYRIAM URIBE-ETXEBARRIA (eds.)

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The theoretical developments that have taken place in generative linguistics in the last decades have crucially altered many of the assumptions of earlier work, leading to major changes in the basic model of the grammar adopted within this framework. While these developments have necessarily influenced our understanding of all aspects of linguistic research, one of the areas that has perhaps been more radically affected by these changes is the study of morphological operations. The history of morphology within the generative tradition is characterized by a tension between lexicalist and syntactic approaches. Although lexicalist approaches to morphology gained many partisans during the 70s and the 80s, the developments in the theory of syntax in the last decade have led to a change in the way in which morphological operations are now understood, and an increasingly more important role has been attributed to syntax in accounting for various fundamental properties of morphological processes.

The purpose of this volume is to provide an overview of some of the most relevant aspects concerning the connection between syntax and morphology by offering a representative sample of the latest work on the morphology-syntax interface. In this introductory chapter, we present a brief survey of the major developments concerning morphological theory within generative grammar (section 1) as an introduction to the thirteen papers that follow, which we summarize in section 2. Our purpose in section 1 is simply to draw attention to some of the questions that bear more directly on the issues discussed in the collection of papers in this volume and to show the motivations behind the development of some leading hypotheses in the field.[1]

1. Where Morphology meets Syntax and viceversa

1.1. The tension between lexicalist and syntactic approaches to morphology

One of the central issues in relation to the morphology-syntax interaction is to establish what morphological operations take place in the syntax and what mor-

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(1) Due to space limitations we are forced to leave aside in section 1 important contributions, theories and frameworks that are not of immediate relevance for the particular approach developed in the papers that follow. For a more complete survey of the development of morphological theory within generative grammar as well as for a recent overview of questions that are currently at the forefront of research in morphology see, among others, Spencer (1991), Spencer & Zwicky (1997) and references therein.

phological operations take place in the Lexicon. This problem is implicitly or explicitly present in all the papers in this volume, but it was not until a Lexicon was introduced in the theory as an independent component of the grammar that the question could arise in this form. Before a Lexicon was introduced into the Standard Theory in *Aspects of the Theory of Syntax* (Chomsky 1965), derivational and inflectional morphology was done necessarily in the syntax. The incorporation of the Lexicon in *Aspects* did not immediately bring about a change concerning the way in which morphological operations were understood. The Lexicon in *Aspects* was basically an inventory of lexical items, with their (idiosyncratic) phonetic, semantic, and syntactic properties. Morphological processes in *Aspects* were taken care of by standard syntactic and phonological rules. Lexical items were specified for inherent and non-inherent features: e.g. German nouns were inherently specified for gender and declension type, while other features such as number and Case were non-inherent. Inflectional morphology involved the addition of non-inherent features by means of syntactic transformations.[2] As for derivational morphology, while verbs like *refuse* and *destroy* appeared as lexical entries in the Lexicon, the corresponding nouns like *refusal* and *destruction* were not listed as such. Rather, they were derived through nominalization rules in the syntax creating elements like *nom^destroy* and *nom^refuse*, which then became *destruction* and *refusal*, respectively, by means of phonological rules (which also dealt with allomorphic variation). The introduction of a Lexicon, separate and distinct from rewriting rules, allowed a simplification of the categorial component and set the basis for the way in which word formation processes, and morphological operations in general, were to be approached in subsequent work in early generative grammar.[3]

It was not until "Remarks on Nominalization" (Chomsky 1970) that lexicalist approaches to the morphology-syntax connection started to emerge. In "Remarks", Chomsky argued that some derived nouns like *destruction* should be derived lexically, rather than transformationally. His position was that the use of transformations should be restricted to capture the relations between linguistic forms in regular and productive processes; operations that make use of idiosyncratic information and are not totally productive and transparent should belong in the Lexicon.[4] Thus, nouns like *destruction* and verbs like *destroy* were proposed to be related in the Lexicon rather than the syntax because of the relative non-productivity of the relations between these verbs and their derived nouns, as well as because of the idiosyncratic semantic relation between these two categories: the verb and its corresponding derived

(2) The distinction between inherent and non-inherent features led to a revision of the traditional "item-and-arrangement approach": non-inherent properties, which corresponded to independent morphemes within the "item-and-arrangement" approach, were reduced to features in *Aspects*. Problems to do with the fact that "morphemes" are often not phonetically realized, as well as problems concerning the order of morphemes, did not arise within the approach adopted in *Aspects*.

(3) Two major theoretical approaches emerged after the publication of *Aspects*: The Lexicalist Hypothesis that originated with Chomsky (1970) (see below) and the approach that came to be known as Generative Semantics, which departed from some of the earlier assumption regarding the model of the grammar in several important respects, in particular, with regard to the existence of the level of Deep Structure. See, among others, Lakoff (1968), Lakoff & Ross (1967), and McCawley (1968); the reader is also referred to Newmeyer (1980) for an overview of this framework.

(4) For discussions on the notion of productivity see the works of Aronoff (1976) and Lieber (1992), among others, which represent different approaches to the matter.

nominal. The two types of processes —lexical and transformational— are illustrated by the contrast between gerundive nominalizations (GN) *(Mary's giving a book to Ann)* and derived nominalizations (DN) *(Mary's gift of a book to Ann)*. While GNs are highly productive, regular and predictable, DNs are mostly unproductive and idiosyncratic. The former are derived by the application of syntactic transformations, while at least some DNs are listed in the Lexicon rather than transformationally derived. Still, DNs are somehow related to their corresponding verbs and gerundivals and they show many of their properties. The morphological differences are captured in *Remarks* by a set of lexical redundancy rules. The introduction of the more abstract and simple X-bar schemata allows Chomsky to account for the syntactic parallelisms between these three types of expressions (verbs, DNs and GNs) in a uniform way.

The idea that some DNs belong in the Lexicon rather than the syntax came to be known as the *lexicalist hypothesis* to derivational morphology. There are two theoretical positions within this lexicalist approach to derivational processes, which are conceptually different, though often not distinguished: (i) what is generally known as the *weak lexicalist hypothesis*, by which DNs are mostly lexically derived, but which could admit some transformational derivations of DNs, and (ii) what Perlmutter (1988) refers to as the *'split morphology' hypothesis*, which denies the possibility that there are DNs that can be derived by means of transformations.[5] Some of the works dealing with these issues can be understood as advocating one or the other position. In this regard, Chomsky's "Remarks" can be read in either of the two ways. The same applies to Anderson's (1982) work, in which what is derivational and what is inflectional is not independently characterized: those processes which happen to be syntactically relevant are inflectional and those which are not, in contrast, are derivational and take place in a morphological component; but what is inflectional in one language could be taken to be derivational in another language and viceversa (see also Lieber 1992).

The lexicalist hypothesis which emerged from "Remarks" paved the way, finally, for another interpretation of the syntax-morphology relation, by which morphological operations in general —whether they are inflectional or derivational— take place in the Lexicon: i.e. transformational rules cannot refer to word-internal processes. This is known as the *strong lexicalist hypothesis*, whose origins are found in Jackendoff's (1972) *(Extended) Lexicalist Hypothesis,* and which gained strong support in the 70s and 80s (see e.g. Lapointe 1980, 1988). Some advocates of the strong lexicalist hypothesis like Selkirk (1982) and Di Sciullo and Williams (1987), however, allow syntactic rules to refer to morphological features. The strong lexicalist hypothesis underlies to a wider or a lesser extent several proposals concerning the relation between morphology and phonology (as well as other components of the grammar), to which we now turn.

The study of the interaction between morphological and phonological operations during the 70s gave rise to a more elaborated theory of word formation processes as well as to a more sophisticated view of the structure of the Lexicon in what is known as the *Level Ordering Hypothesis,* by which the Lexicon is divided into a series

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(5) For related discussion see Hendrick (1995) and references therein.

of levels or strata, each with its own set of affixes (Allen 1978, Siegel 1979).[6] This idea was further developed in the early 80s in the framework that came to be known as the Theory of Lexical Phonology and Morphology, originally put forth by Kiparsky (1982), which presented a detailed theory of a level-ordered Lexicon on the basis of the interaction between phonological and morphological processes. Kiparsky, on the basis of work carried out by Mascaró (1976) and Pesetsky (1979) concerning the cyclic application of phonological rules, argued that cyclicity effects in phonology could be straightforwardly derived by appealing to a level ordered Lexicon, along the lines of the Level Ordering Hypothesis. Within this approach, each of the levels into which the Lexicon is divided contains a set of morphological rules and a related set of phonological operations. Whenever a morphological operation of a given level takes place, the output of this word formation operation is submitted to the set of phonological rules that are associated with that lexical level. Within this model, Kiparsky establishes a clear cut distinction between (i) phonological rules that apply (at one or more levels) in the Lexicon, and (ii) phonological rules that apply after words have been inserted into syntactic structures. The former, which he refers to as the rules of *lexical phonology,* are "intrinsically cyclic because they reapply after each step of word-formation at their morphological level"; the latter, which he refers to as the rules of *postlexical phonology,* are "intrinsically noncyclic" (*op. cit.*: 131-2).[7] Unlike the rules of lexical phonology, the rules of postlexical phonology may apply word-internally as well as across word-boundaries; they are not affected by the internal structure of words or by the nature of the internal components of the word in which they apply.

The idea of a level ordered Lexicon allowed Kiparsky to approach some questions in relation to the possible ordering of affixes (the order of affixes is determined by what level they belong to), as well as regarding existent and inexistent forms and blocking effects, providing a partial answer to some of the questions previously posed by Halle (1973). This approach to the Lexicon was further developed in the work of Halle and Mohanan (1985) and Mohanan (1982, 1986), and enjoyed a great deal of success during the eighties. The proposal defended in some of these works that (some aspects of) inflectional morphology —such as verbal inflection and Case— were located in the Lexicon provided support for a strong lexicalist hypothesis and for the view that morphology was a lexical phenomenon.[8]

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(6) Siegel (1979) distinguishes between two types of derivational affixes on the basis on Chomsky & Halle's (1968) distinction between two types of morphological boundaries and argues that the Lexicon should be divided into two blocks, each containing one class of affixes. Allen (1978) analyzes compounding and inflectional affixes, as well as derivational affixes, and argues that the Lexicon should be divided into four strata, each with its own set of rules: level I and level II for the two types of derivational affixes, level III for compounding and level IV for inflectional morphology.

(7) While Kiparsky (1982) takes the rules of lexical phonology to be cyclic, this view is not shared by Mohanan & Mohanan (1984), who argued that all lexical strata in Malayalam are not cyclic, or by Halle & Mohanan (1985), who argued that Stratum 2 in English is not cyclic. See Hualde (1988), also within the framework of Lexical Phonology for arguments, that in Basque the phonological rules of a given level do not have a chance to apply every time a morphological operation of that Level applies but rather only once, after all the morphological processes associated with that level have taken place. For the proposal that lexical strata may be either cyclic or non-cyclic, see Halle & Mohanan (*op. cit.*) and Mohanan (1986).

(8) See, among others, Sproat (1985) and Fabb (1988) for an overview of the issues that cast doubt on Lexical Phonology in the mid and late 80s.

The incorporation of lexicalist hypotheses, in their different conceptions, into the grammar has led to new ways of approaching the relation between morphology, syntax and phonology. Regarding the model of the grammar, the consequences of adopting one or the other hypothesis are vast. If the split morphology hypothesis is adopted, the relation between morphology and syntax is restricted to processes dealing with inflectional morphology. If the strong lexicalist hypothesis is adopted, the relation between syntax and morphology is necessarily limited. The weak lexicalist hypothesis allows for a wide variety of morphological operations in the syntax, whether they are derivational or inflectional (with anything idiosyncratic and unproductive restricted to the Lexicon). Linguists working within the weak lexicalist hypothesis vary in the role they attribute to syntactic principles in accounting for morphological operations; they are divided into those who believe that specific morphological principles are still required (cf. Baker 1988) and those for whom syntactic principles suffice to account for morphological operations (c.f. Lieber 1992). In the next sections, we deal with some current issues concerning the relation between syntax and morphology in the late 80s and 90s, which are of direct relevance for the topics dealt with in the different papers in this volume.

1.2. Morphological operations and complex word formation in the Principles and Parameters model

One of the basic questions concerning the relation between syntax and morphology is how to provide a structural representation for morphologically complex words. From the early 80s, there have been proposals in the literature in favor of generating the morphological structure of complex words by means of X-bar principles, along the lines proposed for syntactic structure (see e.g. Selkirk 1982 and Lieber 1992). Williams (1981), in particular, argued that words, like phrases, are headed, with the head as the rightmost morpheme of the complex form (the *Righthand Head Rule*).[9] In addition to derivational affixes, inflectional affixes started to be analyzed as heads projecting their own phrases during the 80s. This view gained further support with the development of an approach where the status of heads was granted to functional elements such as Det, Tense, Comp and so on, some of which often show up as inflectional affixes in many languages.

The idea that inflectional affixes are generated in independent syntactic positions is already present in early work in generative grammar. However, it is not until the 80s that functional heads like C(omplementizer) and I(nflection) are assimilated into the X-bar theoretic framework as elements heading their own projections: CP and IP. These projections, introduced by Chomsky (1986) in *Barriers*, replace the earlier S' and S categories, respectively, thus changing some of the previous assumptions regarding clausal architecture. At the same time, functional XPs are also suggested for nominal projections with the development of Determiner Phrases (DPs) (Abney 1987, Torrego 1986, among others). The hypothesis that categories like CP and DP have available

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(9) See Selkirk (1982) and Di Sciullo & Williams (1987) for proposals which relativize the notion of head by allowing the percolation of features of non-heads in certain contexts.

specifier positions led to a revision of standard analyses of wh-movement and the structure of nominal projections towards the end of the decade. As for IP, the study of the properties of inflectional heads soon led to modifications of the IP system in *Barriers*. Pollock (1989), on the basis of work by Emonds (1978) on the position of adverbs, argued that I(infl) should be divided into two different functional heads T(ense) and Agr(eement) —a proposal known as the *Split-Infl Hypothesis*. Conceptually, this hypothesis solved the problem of having two different sets of features (tense and agreement) under the same head. Empirically, the Split-Infl hypothesis was useful to capture crosslinguistic differences (e.g. between English and French) concerning the relative position of verbs, adverbs and negation. Since the late 80s and the early 90s, an increasingly important role has been attributed to Agr and AgrP. Two AgrPs have been assumed as part of clausal structure: a higher AgrP, concerned with subject agreement (AgrsP), and a lower AgrP, concerned with object agreement (AgroP) (see Chomsky 1991, 1993).[10] Agr heads have further been split into Number (Shlonsky 1989, Ritter 1991) and Person (Shlonsky 1989). An Asp(ect) projection (Travis 1991, Hendrick 1991), as well as a Neg(ation) Phrase (Laka 1990, Zanuttini 1991) have also been identified. These projections have been readily assumed in recent work, though with disagreements regarding the hierarchical order between them.[11, 12]

The idea that at least some inflectional morphology is dealt with in the syntax by having inflectional affixes as heads projecting their own phrases can, in principle, be understood within the framework of weak lexicalist hypotheses for the syntax-morphology relation. Baker's (1985, 1988) work on complex predicate formation has to be mentioned among those having the biggest impact on our understanding of the interrelation between certain syntactic phenomena and morphological operations. Baker studies a wide range of incorporation processes crosslinguistically, where one semantically independent word ends up being 'inside' another (passives, applicatives, causatives, noun incorporation and possessor raising, among others). These processes are analysed by Baker as the result of applying standard (syntactic) movement operations to words (heads), rather than phrases: as such, they must obey principles governing movement in the syntax like the *Empty Category Principle* and Travis' (1984) *Head Movement Constraint*, which impose some limitations on the type of complex predicates found in the languages of the world. In his framework, the ordering of

(10) An Agr head involved in agreement with the indirect object has also been proposed (see Mahajan 1990, Mendikoetxea 1992, Cheng &. Demirdache 1993, and Franco 1993, among others).

(11) For discussion regarding the hierarchical order between TP and AgrsP, as well as between TP, AgrsP and NegP, see, among others, Demirdache (1989), Belletti (1990), Laka (1990), Chomsky (1991), Zanuttini (1991), Ouhalla (1993) and Shlonsky (1995).

(12) There is still an ongoing debate with respect to the number and properties of functional categories and with regard to the role they play in syntactic operation. The proliferation of functional categories is indeed a very recent phenomenon and raises a number of questions regarding, among other things, the necessary conditions to postulate functional heads and their universal or language-specific nature, as well as more general theoretical questions to do with explanatory adequacy, which are brought about by the considerable enrichment of descriptive devices. Among the criticisms raised regarding the postulation of the same functional projections for all languages is that the morphophonological component must necessarily include a large number of unprincipled and unrestricted spell-out stipulations. These questions have been argued to become more acute in systems with rich covert structure, such as Chomsky's Minimalist Program; if covert operations are allowed, the relationship between syntax and morpho-phonology becomes more complex. See Webelhuth (1995: 5.3.3), among others, for discussion on this matter.

morphemes within a single word is constrained (as well as by selectional restrictions and subcategorization) by the *Mirror Principle,* according to which morphological derivation must directly reflect syntactic derivations, and viceversa. The syntactic approach pursued by Baker has partially solved some well-known problems in morphological studies. In particular, it provides an answer to questions such as what constrains morphological variation, what the differences are between possible and impossible words, as well as what determines the order of morphemes within complex words. The tremendous impact of Baker's work on issues to do with the morphology-syntax connection is evident in many of the papers included in this volume (see section 2).

Current studies of predicates and argument structure in relation to the morphology-syntax interface in the 90s have been also greatly influenced by Larson's (1988) analysis of double object constructions and Hale & Keyser's work on argument structure and lexical syntax. Larson (1988) argues that constructions with ditransitive verbs like *put,* as well as double object or dative verbs like *give,* involve VP-shells with a phonologically silent (causative) V as the head of the higher VP, to which verbs like *give,* and *put* adjoin through raising.[13] This analysis has recently been extended to transitive verbs like *break,* which can be taken to be syntactically derived complex verb forms, rather than monomorphemic lexical items. The analysis of verbs like *break* involving a causative predicate as part of their predicate composition has been undertaken within the context of work exploring the relation between the Lexicon and syntactic structure. Among the linguists that have dealt with these issues, we have to mention especially the work that Hale & Keyser have been carrying out since the mid 80s, the impact of which is evident in the contributions to this volume. Their work is devoted to deriving theta theory and argument structure from syntactic structure, under the assumption that argument structure is itself a syntax. They have developed a theory of complex word formation at the level of what they refer to as 'lexical syntax' (lexical relational structure, LRS) which makes extensive use of incorporation processes, and have shown that the range in variation in argument structure follows from the application of well-known syntactic principles and constraints to these lexical operations. Their theory has contributed to radically changing the current view on theta-theory and argument structure. Under their approach, theta-roles are not primitives of the theory: what had been previously defined as theta-roles are now reduced to relations determined by the lexical categories and their projections. The paucity of theta-roles follows from the interaction of the small number of lexical categories and from the limits on the type of structural relations into which these categories can enter with their projections, as well as from a principle of Unambiguous Projection which restricts the possible ways in which these lexical categories can project syntactically. The view that theta-roles are not primitives but derivative has become increasingly popular during the 90s, and will be found in many of the papers that follow.[14] Although an analysis of argument structure

(13) For recent related discussion see, among others, Neeleman (1994) and Den Dikken (1995).

(14) The works by Baker, Larson and Hale & Keyser, among others, have also paved the way for the incorporation into syntactic representation of the basics of theories of event-structure like that of Pustejovsky (1987, 1991), as can be observed in some of the papers that follow. For recent approaches that try to derive argument structure and theta-theory from event-structure from a syntactic point of view see, among others, Borer (1994) and van Hout (to appear).

along the lines pursued by Hale & Keyser has become increasingly popular, the similarities between the syntactic processes and principles that they propose operate at the level of lexical syntax and the processes and principles commonly assumed at the level of phrase syntax blurs, to a large extent, the distinction between lexical and syntactic operations, and have led many researchers to question the existence of such a difference.

1.3. The morphology-syntax connection in the 90s

We now briefly turn to some recent proposals that have influenced the way in which we view the relation between syntax and morphology, both from the perspective of a syntactic theory (Kayne 1994, Chomsky 1995) and from the perspective of a morphological theory (Halle & Marantz 1993).

The development of recent syntactic theories has partly provided an explanation for some well-known descriptive generalizations that operate in morphology. In particular, the new theory of word order and phrase structure developed by Kayne in *The Antisymmetry of Syntax*, straightforwardly derives William's Righthand Head rule (see section 1.2). The main claim of this work is that phrase structure always completely determines linear order and that phrases which have different linear order must also have different hierarchical structure. In particular, he argues that asymmetric c-command invariably maps into linear precedence (the *Linear Correspondence Axiom*, LCA). Following Kayne's LCA, in an adjunction structure the adjoining element must invariably precede the element to which it adjoins. It follows under this analysis that in a complex word, the head of the word must be preceded by the other components. This subsumes Williams's Righthand Head Rule.[15]

Regarding the morphology-syntax interface, a crucial hypothesis of Chomsky's (1995) Minimalist Program (MP) is that syntactic operations are triggered by morphological features. These are part of the feature specification of lexical items and enter into checking operations in the syntax (either in the overt syntax or at LF). The grammar contains a computational system and a lexicon. Under minimalist assumptions, the computational system consists of only two interface levels of representation, PF and LF, which interact with other subsystems of the mind/brain. The inventory of functional categories as the locus of formal features is drastically reduced in Chomsky (1995) in an attempt to limit the enormous descriptive power of the late Principles and Parameters model and in search of explanatory adequacy (now formulated in terms of the question "How perfect is language?"). Thus, Agr heads are eliminated under the assumption that they contain features which are neither phonologically nor semantically interpreted (e.g. [-Interpretable] features). Lexical items like nouns and verbs are fully inflected in the lexicon for Case, tense, etc. and must

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(15) For relevant discussion on the LCA see Chomsky (1995), Nunes (1996) and Uriagereka (1997). Chomsky (1995) introduces the LCA into the theory but departs from Kayne's original proposal in several ways. In particular, while Kayne takes the LCA to be a general condition on the projection of syntactic structures governing LF as well as PF, for Chomsky the LCA is a principle of the phonological component which applies to the output of the morphological component.

check their features against the matching features of a (functional) head. An operation Spell-Out can apply anywhere in the derivation of a linguistic expression (Σ); the computation then splits into two parts so that Σ can be mapped into two interface representations, a PF representation and an LF representation, satisfying its output conditions at these two interfaces. The features of functional heads must be eliminated for convergence prior to PF or LF; i.e. they are in the structure simply for checking purposes. While computation to LF is uniform and movement is mainly driven by checking operations involving morphological features (checking of Case, checking of the D feature of T, checking of phi-features, and so on), Chomsky assumes that computation to PF is not uniform. Little attention is paid to the properties of computation to PF. However, Chomsky postulates the existence of an independent morphological module on the way from Spell-Out to PF, which constructs word-like elements which are subsequently subject to phonological processes.[16]

This view contrasts with the approach adopted by Halle & Marantz (1993) within the framework of *Distributed Morphology* (DM), for whom computation from Spell-Out to PF is uniform.[17] DM adopts the basic organization of the grammar in Principles and Parameters, with the addition of an independent component of Morphological Structure (MS), which is the interface between syntax and phonology. In this regard, MS is similar to Chomsky's morphological component in the Minimalist Program which is also located between Spell-Out and PF; but as a theory of morphology, DM attributes a crucial role to this component. Despite the fact that MS is a level of grammatical representation with its own principles, the operations manipulating terminal elements at this level are well-motivated operations found in other levels of the grammar (between DS and SS). In fact, one of the central claims of DM is that morphology is not concentrated on a single component of the grammar, but is distributed among several distinct components.

There are several other ways in which Halle & Marantz's view of the morphology-syntax interface within the framework of DM differs from Chomsky's view in the MP. These differences can be illustrated in relation to the way they approach inflectional morphology. One of the central claims of DM is that terminal nodes mediate the connection between syntactic/semantic information and phonological information in a uniform way. This goes against Chomsky's idea that the features of functional categories are in the structure simply for checking purposes; for instance, the features of categories like Tense must be checked off in the course of computation since those features are realized on the verb which enters the computational system as an inflected form. In DM the syntax operates with bundles of features and lexical items are inserted through Vocabulary insertion at the level of MS: all terminal nodes —lexical and functional, those present at DS and SS, and those added at MS— are subject to Vocabulary insertion at the level of MS. A

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(16) See Bonet (1991) for arguments in favour of a morphological component or the way to PF, based on different assumptions from those of Chomsky (1995).

(17) According to Halle & Marantz (1993), Distributed Morphology stands between 'affixless' or a-morphous approaches to morphology (Beard 1991, Anderson 1992 and Aronoff 1994) and approaches like that of Lieber (1992), by which affixes, like other lexical stems, are morpheme pieces; it shares with the former the separation of the terminal elements in the syntax from their phonological realization, and with the latter that lexical (Vocabulary) entries relate bundles of morphosyntactic features to bundles of phonological features.

related difference between the two models concerns word-formation processes. In DM these processes take place in the syntax and at MS, by means of syntactic and morphological operations (merger, fusion, fission, etc.) combining heads: i.e. there can be no inflected verbs or nouns in the Lexicon, contrary to what Chomsky claims. Thus, the MP and DM treat inflectional morphology in very different ways.[18]

1.4. Parametric variation and the morphology-syntax interface

Some of the most interesting questions regarding the interaction between syntactic and morphological operations have to do with crosslinguistic variation: Are there morphological parameters? What are the limits of parametric variation? What do morphological parameters derive from? Can we make syntactic properties of languages follow from morphological parameters?

A particularly appealing proposal in Chomsky's MP is that parametric variation belongs in the Lexicon and, in particular, it is based on the nature of morphological features associated with lexical items rather than on the computational system, which is assumed to be the same in all languages (see also Borer 1984 for related discussion). The proposal that parameters are morphological in nature underlies the discussion that follows, with which we finish this brief overview. We will simply mention two parameters which have received a lot of attention in the literature and which are of direct relevance for some of the topics addressed in the papers in this volume: the ergativity parameter and the polysynthesis parameter.

Questions related to Case are at the center of the ergativity parameter. A well-known difference between ergative and (nominative-)accusative languages concerns the Case assignment of subjects and objects. In accusative languages the subject is always assigned nominative Case, regardless of the type of predicate (i.e. whether the verb is transitive, unergative or unaccusative). Objects, in contrast, are assigned accusative Case, so that subjects and objects differ in the Case they are assigned. In ergative languages, however, the type of predicate influences the choice of Case for the subject; while some subjects display ergative Case, other subjects display absolutive Case —the Case associated with objects of transitive verbs—, so that some subjects pattern along with objects regarding Case.[19] In sum, the ergativity parameter deals with the way arguments are grouped together regarding Case. These differences in the Case system usually go together with differences in the agreement systems exhibited by the two language types.

Early approaches to this phenomenon linked differences in Case patterns to differences concerning the syntactic positions into which arguments of transitive clauses are mapped at the level of D-Structure in the two groups of languages (de Rijk 1966, Marantz 1984). Marantz, in particular, argues that in accusative languages

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(18) See Halle & Marantz (1993: 6) and Marantz (1995) for more discussion on the differences between DM and Chomsky's MP.

(19) In some ergative languages like Dyirbal and Inuit the distinction is between subjects of transitive verbs (ergative) vs. subjects of intransitive verbs —unergative and unaccusative— (absolutive); in other ergative languages, like Basque, the distinction is between subjects of transitive and unergative (ergative) vs. subjects of unaccusative verbs (absolutive).

the object is assigned its theta-role by the V and the subject is assigned its theta-role by the whole predicate (VP), while in ergative languages the reverse situation is found, so the association between semantic roles and initial grammatical relations is different in the two types of languages. He assumes the process of Case assignment to be identical in the two types of languages, and argues that it is the opposite D-Structure (or Predicate-Argument) representation of the arguments as subject or object that results in differences regarding what Case is assigned to those arguments.

It is now commonly accepted that all arguments are uniformly mapped into certain syntactic positions within the maximal projection of the verb (including the subject, after the *VP-Internal Subject Hypothesis* of Zagona 1982, Kuroda 1988, and Koopman & Sportiche 1991, among others).[20] According to this assumption, ergative and accusative languages share essentially the same structure at the base. Differences between the two types of languages are now derived by taking advantages of recent proposals regarding clausal architecture and the mechanisms for Case assignment —as part of a general process of feature checking. Under the hypothesis that argumental NPs move out of the VP to check their agreement and Case features in a spec-head relation with a relevant head, the contrast exhibited by accusative and ergative languages follow from differences in the kinds of movements which nominal arguments undergo in order to have their Case-features checked.[21] Within this approach, the reason why in ergative languages intransitive subjects (S) and objects (O) are assigned the same Case is because they move to check their Case to the same (specifier) position; the same line of argumentation explains why transitive subjects (A) and S have the same Case in accusative languages. Interpreted in this way, a theory of ergativity should provide an answer to the question of what it is that triggers movement of the arguments to one specifier position in one group of languages and to a different specifier position in the other group.

There is, however, some disagreement as to what exactly these positions are and what their hierarchy is in the structure. Two major approaches can be distinguished within this general framework of assumptions. Proponents of the first approach maintain that in ergative languages A moves higher than O (see, among others, Bobaljik 1992, Chomsky 1993 and Albizu, this volume). Under this view ergative and accusative languages have basically the same transitive paradigms, though they differ in the derivation of intransitive clauses. In contrast, following the second approach, ergative and accusative languages have essentially the same intransitive paradigms but differ in the derivation of transitive clauses. Although with variations in detail concerning syntactic structures and NP-movement, the partisans of the second approach share the view that in ergative languages O moves higher than A at some point in the derivation, while in accusative languages, the pattern of movement is reversed (see, among others, Murasugi 1992 and this volume, Bittner 1994, and Bittner and Hale 1996). This hypothesis captures the intuition of early

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(20) But see Diesing (1992) for whom subjects of individual-level predicates are generated directly in [SPEC, IP], unlike subjects of stage-level predicates, which are VP-internal.

(21) Since the late 80s it is a fairly standard assumption within the Principles and Parameters framework that structural Case is checked in a spec-head relation with a relevant (functional) outside the VP. Additionally, in Chomsky's (1995) MP structural Case can be checked through adjunction of a Case-feature to the relevant head (either T or V).

analysis of ergative languages, which locates O in a higher position in the structure than A, while maintaining a uniform thematic and syntactic structure below the VP.

The second major area of crosslinguistic variation in morphosyntax to be mentioned in this introduction concerns what is known as the polysynthesis parameter. Polysynthetic languages differ from non-polysynthetic languages in that they display several of the typical properties of non-configurational languages (freedom of word order, dropping of NP arguments and existence of discontinuous expressions), as well as a wide range of incorporation phenomena. In her pioneering work on nonconfigurationality, Jelinek established a connection between some of the characteristic properties of these languages and the rich verbal and nominal inflection that they exhibit (Jelinek 1984, 1988, 1989). In particular, she argued that these properties follow from the fact that in polysynthetic languages thematic roles are assigned to agreement markers instead of to syntactic argument positions (the *Pronominal Argument Hypothesis*). Baker (1996) establishes a link between the Pronominal Argument Hypothesis and the conclusions of his previous work on incorporation (Baker 1988) and argues that what distinguishes polysynthetic languages from other types of languages and determines the shape and properties of the former is not the cumulative result of a series of differences but rather follows from a single property. In particular, he argues that both the Pronominal Argument Hypothesis (by assuming that inflectional morphemes are verbal arguments) and his theory of incorporation (by assuming that in complex forms derived by incorporation one of the elements is the syntactic complement of the other) share the view that there are "syntactic argument relations that are expressed morphologically". This is what seems to be the definitory characteristic of polysynthetic languages. On the basis of this, Baker puts forth the hypothesis that the polysynthesis parameter is a macroparameter, and defines it as a morphological visibility condition: "A phrase X is visible for theta-role assignment from a head Y only if it is coindexed with a morpheme in the word Y via (i) an agreement relation, or (ii) a movement relationship" (*op. cit.*: 17). What distinguishes non-polysynthetic languages from polysynthetic ones and is characteristic of the latter, under Baker's approach, is that agreement morphemes and incorporated noun roots form part of the same system to render an argument visible. While Baker's theory is certainly attractive, whether Baker's macroparameter can alone derive all the properties exhibited by polysynthetic languages has been questioned by some researchers, who argue that his theory fails to account for the syntactic properties of some languages which meet the morphological criteria of polysynthetic languages (see, among others, Matthewson, this volume, and references there). Under this alternative view, the distinctive properties of polysynthetic languages follow from the specification of not one but several different parameters.

2. The papers in this volume

The thirteen papers in this volume can be roughly divided into three major groups according to the topics they explore in relation to the morphology-syntax interface: (I) the properties of inflectional morphology and its place in the grammar,

(II) the relation between argument structure, lexical semantics and the morphology-syntax interface, and (III) parametric variation.

I. As the previous section has emphasized, one of the most controversial issues in the history of morphology in generative linguistics is the place of inflectional morphology in the grammar. Three papers in this volume focus on this area of research on the basis of the study of a variety of phenomena regarding inflectional morphology and the realization of inflectional features. In particular, ALBIZU's and PHILLIPS's papers bear directly on questions such as whether inflectional morphology should be defined as a lexical or as a syntactic process. ELORDIETA's paper, in turn, explores the properties of inflectional heads in the morphophonological component.

In "Generalized Person-Case Constraint: A Case for a Syntax-Driven Inflectional Morphology", ALBIZU explores the nature of the relationship between syntax and inflectional morphology. He argues for a syntactic approach to inflectional morphology based on the study of the *Person-Case Constraint* (PCC). The PCC —"if DAT, then ACC(ABS)-3rd" (Bonet 1991, 1994)— is a morphological condition against particular combinations of Dative and Accusative (or Absolutive) agreement markers, attested in a heterogeneous group of languages. Albizu argues for a new approach to this restriction and proposes what he calls the *Generalized Person-Case Constraint* (GPCC), which subsumes the more particular PCC. The analysis he proposes in this paper introduces two fundamental conditions in the definition of the GPCC: these are 'c-command' and 'locality' —defined in terms of 'inclusion in a same minimal domain'—, the latter being subject to parametric variation. The claim that inflectional morphology is derived in the syntax follows, under Albizu's analysis, from three crucial properties of the morphological component that are well established in the characterization of the GPCC: (i) the strong parallelism between syntactic and morphological structure; (ii) its sensitivity to structural conditions such as 'c-command' and 'locality', which are generally believed to belong in the syntax; and, more importantly, (iii) the sensitivity of this morphological process to the syntactic operation of move-alpha. In particular, this last property casts doubts on the correctness of lexicalist approaches to the phenomenon under study, and more generally, on lexicalist approaches to inflectional morphology. Although the discussion in the paper concentrates on Basque and Romance data (Catalan and Spanish), the paper also contains an interesting discussion of this phenomenon in other unrelated languages. A particularly appealing feature of Albizu's analysis is that the final system is designed to have wide crosslinguistic explanatory power and to cover constraints on the combination of person-agreement markers other than the PCC.

The proposal that complex morphological heads are syntactically built is also found in PHILLIPS' paper "Disagreement between Adults and Children", which addresses the issue of learnability in relation to the syntax-morphology connection. Phillips looks at the loss of agreeement morphology in constructions involving wh-movement in adult languages (wh-disagreement effects) and their relation to root infinitives in early child language —two phenomena which had not been related previously in the literature. Wh-disagreement effects present a wide range of crosslinguistic variation, both regarding the syntactic contexts where loss of agreement takes place, as well as the specific morphological reflex of the phenomena. Phillips addresses two major

questions surrounding the 'disagreement effects'. First, in adult languages showing an alternation between declarative sentences with subject-verb agreement and interrogative sentences lacking subject-verb agreement, (a) what is it that accounts for the wide range of cross-linguistic variation in this alternation? and (b) how are adult languages showing disagreement effects learned by children? Second, whereas adult wh-disagreement languages show loss of agreement in wh-extraction, child language involves loss of agreement in declaratives, agreement being obligatory in wh-question. What does this apparently reverse distribution follow from? Phillips offers an analysis that derives the whole set of disagreement effects in adult and child language in a uniform way. Under the assumption that morphologically complex heads are built syntactically (movement being triggered by morphological factors), he argues that the two processes of disagreement effects are the result of shorter than normal verb movement in the syntax —a verb failing to reach an agreement head to which it would otherwise attach. Concerning the syntactic contexts for wh-disagreement effects, Phillips assumes that movement only takes place when required and derives the contrast in agreement between declaratives and wh-questions in adult language from the different requirements imposed on the licensing of *pro* and wh-trace: the first one needs to be identified by overt agreement while the second one does not. The morphological side of the phenomenon is now straightforwardly derived: the morphological spell-out of the features of the verb reflects the syntactic position this head has reached in the structure. Since wh-disagreement effects are related to verb movement which is triggered by morphological features, children are thus able to learn where wh-disagreement does or does not apply in their language with little exposure to the data. This account immediately explains why wh-disagreement effects are restricted to pro-drop languages.

As for the phenomenon of root infinitives in child language, Phillips proposes the same analysis: children do the same as those adults which have wh-disagreement, but this process takes place in languages with different properties regarding verb movement. Children know that in wh-questions the verb has to raise to C; as a side effect of this movement, the verb will pick up agreement-features on its way to C. The lack of agreement effects in child language follows because in declaratives young children may fail to move V to I, unless other requirement overrides this; as a result, no inflectional heads are picked up and the default infinitival verb form is spelled out. An advantage of this approach is that it can explain why in languages where verb movement is necessary to license nominative Case, overt subjects almost never cooccur with root infinitives. While the two type of disagreement effects have separately drawn a great deal of attention in the literature, it is here that they are related to each other and accounted for uniformly for the first time. Phillips' paper thus offers a novel account of a set of puzzling problems both in the area of parametric syntax and language acquisition. A particularly interesting aspect of this paper, as pointed out by the author himself, is that data from child language is used to offer a new way of approaching facts in adult language, not only regarding wh-disagreement facts —the main focus of his paper— but also other constructions that show related (dis)agreement phenomena (complementizer agreement, object agreement, and agreement in structures involving extraction under successive cyclicity).

ELORDIETA's paper "Feature Licensing, Morphological Words, and Phonological Domains in Basque" explores the relationship between the syntactic and morpho-phonological components of the grammar, based on the generalizations observable from a phonological phenomenon in Leketio Basque (LB): Vowel Assimilation (VA). By this process, the initial word of determiners and inflected auxiliary verbs assimilate their initial vowels to the last vowel of the syntactic element that precedes them, a noun or adjective and a participial verb respectively. Other types of heads occurring after a participial verb, such as causative verbs, modal particles, subordinating conjunctions, or lexical heads do not have their initial vowels affected by VA. Elordieta sets to explain why functional heads realizing morphosyntactic features in this language participate in VA, in contrast with other types of heads which do not realize such features. He argues that the theories of lexical and postlexical phonology developed so far cannot capture the domain of application of VA satisfactorily. His analysis is that in the morphophonological component there is a well-formedness filter which requires every phonetically realized linguistic element to be a part of a well-formed morphological constituent, which he calls a m(orphological)-word. Heads realizing morphosyntactic features are morphologically deficient, and thus need to compensate their deficiency by associating with other heads which are morphologically strong. That is, they need to be morphologically licensed. This is achieved, Elordieta argues, either by the syntactic incorporation of the morphologically strong head, or by merger in the morphological component. Agreement and tense features require the first mechanism in LB, and the determiner gets licensed by an operation of suffixation in the morphophonological component. The proposal is that the m(orphological)-units so formed may be mapped or interpreted as phonological domains in the phonological component proper. VA in LB is specified to apply within a m-word. Thus, the differences in phonological behavior displayed by syntactic heads in LB are explained by their different morphosyntactic properties. This novel approach presented by Elordieta provides the theoretical framework for a more complete understanding for the mapping between the syntactic and morphophonological components, specially in what regards the relationships among heads.

II. A recurrent topic in this volume is the relation between argument structure, lexical semantics and the morphology-syntax interface, with particular attention to complex predicate formation. This is a question addressed at different levels, and sometimes from competing positions, in the papers by BELVIN, DAVIS, DEMIRDACHE, DEMONTE & VARELA, HALE & KEYSER, KURAL, MINKOFF, and RIGAU.

Since the mid 80s HALE & KEYSER have been looking into the relation between lexical items and the syntactic structures in which they are found, under the commonly held assumption that syntax is projected from the lexicon. Their central hypothesis, as stated in section 1.2. of this Introduction, is that the proper representation of argument structure is itself a syntax at the level of lexical representation (lexical relational structure: LRS), from which thematic roles are derived (see Hale & Keyser 1993 and the references cited there). It is within this context that their contribution to this collection is developed.

The main concern of Hale & Keyser's paper in this volume, "The Limits of Argument Structure", is to define the principles that account for both the range of

variation and the limits of argument structure. Among the questions the paper addresses are why unergatives have no causative alternant, and why unaccusatives can have causative alternation. In answering these questions, they develop the hypothesis that patterns in argument structure can be derived crosslinguistically from two variables: (i) a set of universal features inherent to lexical categories, and (ii) principles of projection according to which syntactic structure is projected from lexical items (i.e. principles that constrain the way in which categories project). Regarding the former, their proposal is that categories like N, V, A and P (understood as universal categories independently from how these categories are morpholexically realized in the different languages) are universally defined in terms of features indicating the syntactic relations [+/-subject] and [+/-complement]. Within this context, they define V as [-s, +c], A as [+s, -c], P as [+s, +c] and N as [-s, -c]. As for the projection principles, there is a principle of Full Interpretation that requires any maximal projection properly dominated by a root lexical to be a subject or a complement, and an asymmetry principle by which sister relations can only be binary. Their hypothesis is tested in two languages which display different morphological behavior and which show overt differences in the way they form derived verbs: English and 'O'odham-Pima and Papago of southern Arizona and northern Sonora. Languages like English, in which the morphological processes by which Vs are formed (out of Ns and As, for instance) are largely non-overt make extensive use of the process of incorporation of Ns and As into empty V heads. This process is entirely driven by phonology and, in particular, by the requirement that empty heads be supplied with a phonological matrix to be interpreted at the level of PF.[22] In contrast, in 'O'odham, the majority of derived verbs involve overt derivational morphology. The authors show that, despite these differences, derived verbs in this language conform to the very same principles which appear to limit derived lexical structure in English, thus supporting the universal nature of principles limiting argument structure. The central assumptions of Hale & Keyser's theory have been highly influential and they are implicitly or explicitly present in several articles reviewed in this section, to which we now turn.

    MINKOFF's proposals in his paper "Argument Structure and Animacy Entailment" are crucially based on Hale & Keyser's (and Jackendoff's) idea that broad thematic roles reduce to properties of syntactic configuration, but he argues in favor of enriching Hale & Keyser's lexical relational structures (LRS) so that they provide information not only about thematic structure but also about animacy (in relation to derived verbs). The goal of Minkoff's contribution in this volume is to account for certain restrictions on the distribution of (so-called) thematic roles entailing animacy —Agent, Volunteer, Beneficiary and Sensor. These animacy entailing roles are subcases of the broader roles Cause, Theme, Goal, and Patient, respectively and, according to this author, they are produced by the application of an optional lexical semantic interpretation to base-generated structures, adding "lexico-interpretational

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(22) The idea that derivation to PF is guided by the principle of Full Interpretation is in line with current ideas in linguistic theory and, in particular with Chomsky's Minimalist Program, by which syntactic processes are derived from interface conditions (see section 1.3. in this introduction, as well as Elordieta, this volume, for well-formedness conditions at the level of PF).

animacy-entailment" (LIAE) to otherwise more general thematic roles. Animacy-entailing roles are optionally available in certain theta-positions, and are constrained by configurational principles, but the lexical idiosyncrasies of particular verbs can force the application of the LIAE. Particularly interesting for the relation between lexical semantics and syntax and morphology is the application of the LIAE to the LRS of deajectival and denominal verbs. Minkoff follows proposals by Hale & Keyser and assumes that these verbs are derived by incorporation processes from underlying LRS. Restrictions on the generation of animacy-entailing roles on the arguments of derived verbs apply at the level of LRS. Thus, the generalization is that the LIAE applies to base-generated syntax: the D-structure of non-derived verbs, and the LRS of derived verbs. It is further suggested that the morphology of derived verbs must 'remember' the LIAE after the LRS no longer exists. It follows that whether a verb is derived or non-derived, the same constraints apply (transitive verbs can select LIAE on subject or object, but not on both, unaccusative verbs do not select LIAE, and so on). Minkoff's conclusion is that the relation between syntax and morphology at the level of lexical semantics is richer than has been argued previously: it includes LIAE. An interesting hypothesis which emerges from the proposals discussed in this paper is that there may be a certain binary order to much of the thematic relation realm, because it appears to hold that for each of the thematic relations established by syntactic structure, there exists an animacy-entailing subcase which is created by the LIAE.

The proper characterization of thematic roles and argument structure underlies to a wider or a lesser extent the classification of verb types and the typology of complex verbal predicates, areas which are extensively discussed in the papers in this volume. The papers by Belvin, Davis, Demirdache and Kural focus on a variety of morphosyntactic operations on verbs and analyze various aspects of the morphology of predicates and its relation to argument structure and event (de)composition. Causation and causative formation —one of the most controversial areas in the morphology-syntax interface— is a topic addressed in detail from different angles by Belvin, Demirdache and Kural.

Both BELVIN's "The Causation Hierarchy, Semantic Control and Eventivity in Nishga" and KURAL's "Verb Incorporation and Causation Types" discuss processes to do with causative complex predicate formation in terms of (overt and non-overt) morphological operations. The study of causation must determine the argument structure associated with the predicates involved. This is an area in which aspects of verb syntax and morphology are closely related to argument structure and viceversa. Belvin's and Kural's proposals are radically different in their treatment of semantic roles in causative constructions, though they both assume the relatively standard view that CAUSE is a two-place predicate whose arguments correspond to a causer (agent) and to a caused event (against an analysis in which CAUSE is a three-place predicate with an agent, a patient and a caused event, as in Alsina 1992).

Causative structures can be ambiguous between interactive (or direct) causation readings and circumstantial (or indirect) causation readings. KURAL's paper argues that the morphological status of the causative predicate CAUSE (as part of the V-CAUSE complex predicate) is responsible for the two readings associated with causatives, depending on whether the event is caused by the causer acting on the causee

(interactive) or by the causer manipulating the circumstances (circumstantial). The two readings are also sensitive to the type of verb heading the embedded predicate. With unaccusatives, the availability of the interactive reading depends on whether the lower V is incorporated into the higher CAUSE predicate overtly (morphological causatives, that is when CAUSE is a bound morpheme), in which case the interactive reading is not possible, or covertly (periphrastic causatives), in which case the interactive reading is possible. As for the circumstantial reading, it is not available for null causatives (i.e. the causative use of English verbs of motion, like *run*, *march*, *walk* and *jump*). The unavailability of the interactive reading with unaccusative verbs when incorporation into CAUSE takes place overtly is related to the fact that the only argument of an unaccusative is too low to become the patient of CAUSE (it is not in [SPEC, VP] of the lower predicate, but rather it is in the position of complement of the V). When this is the case, the whole lower VP becomes the patient of CAUSE, which accounts for the circumstantial reading of the structure. The reason why this latter reading is unavailable with null causatives is related to a particular bracketing of the V-CAUSE complex, which places restrictions of what element can be the patient. Regarding the relation between causation and argument structure, Kural (following Jackendoff 1990 in distinguishing categorial selection and thematic licensing) offers a reinterpretation of Alsina's (1992) proposal that the patient role may be associated with different elements, and he is thus able to account for the two readings associated with causatives. In the interactive reading CAUSE assigns the role patient to the subject of the embedded predicate (in [SPEC, VP] of that predicate), and thus the causee receives a composite role: patient from CAUSE and agent from the embedded predicate. In the circumstantial reading, the patient role of CAUSE is assigned to the whole embedded VP, so that the causee receives only the semantic role assigned by the embedded predicate. To reach these conclusions, Kural draws on data from languages showing a variety of morphological processes in causatives (mainly English and Turkish, but also Hungarian, Greek, Japanese and Korean). Together with aspects of verb morphology, Kural's paper raises interesting issues in relation with verb typology which also bear directly on the syntax-morphology interface. In particular, facts to do with causation seem to suggest that the classic dichotomy unaccusatives-unergatives is not fine-grained enough in that there seem to be elements that share properties of both (see Davis's, Demirdache's, Hale & Keysers's and Rigau's papers in this volume for relevant discussion).

BELVIN's analysis is based on the study of causative constructions in the Tsimshian language Nisgha. There are in this language three morphological distinct causative predicates (bound morphemes) selecting three different types of base predicates: states, events and actions. Depending on the semantics of the base predicate, the causee is interpreted (i) as a volitional agent, with actions; or (ii) as non-volitional agent: with events (which are associated only with an actor role) and with states (which do not assign an agent theta-role to their agents). These causative morphemes can be stacked on to the same base predicate creating complex verbal forms of two and even three causative morphemes. According to Belvin, the interpretation of these complex forms, as well as restrictions on co-occurrence, are determined primarily by semantic factors to do with the eventuality described by the embedded predicate. In relation to the argument structure of causative predicates, Belvin's

analysis departs even more sharply than Kural's from Alsina's (1992) analysis, which, in his view, gives the wrong empirical results regarding the contexts in which the structure is interpreted as involving direct or indirect causation. He argues that the interpretation of the causee as volitional or non-volitional in the two readings (direct and indirect) is simply a factor of the semantics of the embedded predicate and not the result of complex predicate formation, even in a language like Nisgha where CAUSE is a bound morpheme. In Nisgha, where there is a specialization of causative morphemes, the direct causation morpheme *'in* attaches to events [+eventive, -control], associated with an actor which is interpreted as non-volitional causee in these structures. However, the indirect causation morpheme *gwin-* attaches to actions [+eventive, +control], associated with an agent which is interpreted as a volitional causee, again as a factor of the semantics of the embedded predicate (on the distinctions between agents and actors, see, among others, Dowty 1991, Jackendoff 1991, Demirdache, this volume, and Minkoff, this volume). Belvin's analysis is thus an interesting alternative to the general view that causatives are created through a process of complex word formation, even though he draws on data from a language like Nisgha that looks like a perfect candidate for that analysis. The conclusions reached by Belvin are of particular relevance for the current debate on theta-theory and theta-roles. In accordance with several other authors in this volume, his analysis supports the view that the content of theta-roles has no independent status; what determines their content, in his view, is the type of eventuality associated with a particular predicate.

The issue of agent control and, in particular, the difference between agents and actors in relation to causation is also addressed, from a different theoretical position, by DEMIRDACHE in "*Out of Control* in Salish and Event (De)Composition", which examines the puzzling properties and restrictions exhibited by *out of control* morphology in St'át'imcets (a language member of the Northern Interior branch of the Salish family). In this language, the morphology on the predicate can mark the degree of control of the agent over the action denoted by the verb. There are three different degrees of control: control vs. neutral control vs. out of control. The out of control marker *ka...a*, which emphasizes the absence of control over some state or event, can affix to different types of predicates imposing restrictions on their interpretation. When attached to an unergative or a transitive verb, out of control morphology suppresses the control of the agent over the action denoted by the verb. Two readings are available, but the distribution of these two readings is determined by lexical and grammatical aspect. When out of control affixes to a verb that denotes an activity, it yields an 'able to' reading. In contrast, when the verb has a causative meaning, it yields an 'accidental' reading; this reading disappears under the scope of certain operators (such as the progressive or negation). What is particularly interesting is that out of control is also possible with unaccusatives —that is, with predicates which denote actions which are never under the control of an agent, since they lack an external argument altogether. When out of control applies to unaccusative predicates it yields a suddenly/accidental reading; this reading disappears when under the scope of the progressive or negation, in which case only the ability/capacity reading is possible.

Demirdache argues against reducing agent control to volition or intentionality and against an analysis (of out of control) based on thematic roles: the different degrees of control cannot be derived from the assignment of different roles to the subjects. Instead, she proposes an alternative analysis of the properties of out of control morphology which is based on two hypotheses. The first hypothesis is that unaccusatives and causatives share the same underlying semantic representation: unaccusatives have underlyingly causative semantics. Under the assumption that certain morphosyntactic processes operate on event structure, the second hypothesis she puts forth is that out of control affects the lexical semantic representation of a predicate without altering the number of arguments it has. It is the equivalent of a passive defined on the lexical semantic representation of a predicate. However, while passive suppresses an external argument position, affixation of out of control shifts the event-type associated with its predicate into a lower event-type: it suppresses either the initial subevent in the event structure of a predicate, or the name associated with this subevent. This hypothesis allows her to explain why out of control yields precisely either an ability, an accidental or a suddenly/spontaneous reading. The hypothesis that causatives and unaccusatives share the same underlying semantic structure allows Demirdache to elegantly derive the intriguing properties of the phenomenon: in particular (i) why out of control can apply to unaccusatives; (ii) why out of control morphology yields an accidental reading with causatives and unacussatives, but an ability reading with unergatives; and, (iii) why out of control yields a suddenly/spontaneous reading with unaccusatives. The conclusions reached in the paper support the proposal, independently argued for in the literature, that unaccusatives are underlyingly causative predicates.[23] The paper also provides evidence for a model of event structure where the aspectual properties of events are configurationally and compositionally defined in terms of recursive event structure,[24] and contributes to the debate on theta-theory by exploring the hypothesis, defended in her previous work with Davis (Davis & Demirdache 1995), that agentive and causative readings follow from the projection of two different event frames.

The issues discussed by Demirdache in her paper are closely related to those addressed by DAVIS, although they reach different conclusions with regard to unaccusative predicates. In "Deep Unaccusativity and Zero Syntax in St'át'imcets" Davis explores the sublexical syntax of predicates in St'át'imcets. This detailed study of the internal structure and morphology of predicates in this language has immediate consequences for the theory of argument structure and the formulation of the unergative/unaccusative distinction. In particular, Davis puts forth the following two claims: (i) all predicates are based on roots which are lexically associated with a single, internal argument; and (ii) all transitive and all unergative predicates are derived by morphosyntactic operations, which may be phonologically null. By adopting the mechanism of zero-derivation along the lines in Pesetsky (1995), Davis shows that his analysis extends to languages like English, where morphosyntactic operations on predicates are often nontransparent and covert. While previous analyses

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(23) See Chierchia (1989), Reinhart (1991) and Levin & Rappaport Hovav (1995), among others.
(24) See, among others, Pustejovsky (1987, 1991) and van Hout (1993, to appear).

have traditionally treated both unergative and unaccusative as two subclasses of primitive, intransitive verbs (Permutter 1978), or treat some unergative as primitives and some unaccusative as derived (Levin & Rappaport-Hovav 1995), Davis concludes that unaccusative predicates are primitives while unergatives are derived. The same conclusion is reached by Hale & Keyser (1993, this volume). Davis' paper also bears directly on the controversial question of whether theta roles are primitives or not. Following Davis and Demirdache (1995), Davis argues that the event-structure representation of a predicate (in the sense of Pustejovsky 1991) determines the projection of arguments into the syntax. His position is that predicates come lexically equipped with a single, underspecified "theme" argument; other theta roles, including the *agent* theta-role, must be added by manipulating the aspectual structure. Thus, like a number of the authors in this volume, the hypothesis defended by Davis is that theta-roles are derivative. Davis further discusses a set of agentive unaffixed intransitives, referred to as *control roots* in the Salishean literature. He argues that control roots are derived and shows that their behavior parallels the class of overtly derived intransitives which are usually termed "middles", "antipassives" and "low transitive predicates".

A particularly puzzling problem that arises from the conclusions reached by DEMIRDACHE and DAVIS regarding unaccusative predicates in their respective papers is that while, as Davis shows, there is strong evidence that unaccusatives are morphologically primitive in St'át'imcets, there are also strong arguments for assuming that they have underlyingly causative semantics, as Demirdache demonstrates.[25]

The proper representation of unaccusative verbs is also discussed by RIGAU, as a consequence of the analysis of locative and existential sentences with *ésser* 'be' and *haver* 'have' in her paper "Locative Sentences and Related Constructions in Catalan: *ésser/haver* Alternation". Her account of these constructions in Catalan is based on Hale & Keyser's hypothesis that heads appear in lexical relational structures (LRS) which are the proper representation of argument structure. It is at this level that processes such as preposition incorporation, which plays a crucial role in her analysis, take place. Following Kayne (1993) (see also other references in Rigau's paper), Rigau assumes that *haver*, which obligatorily appears with the clitic *hi* (*haver-hi*) is an instance of *ésser* with an abstract central coincidence preposition incorporated into it. In fact, these verbs share the same LRS, but they differ in the overt/covert nature of the preposition, which when overt does not incorporate into the verb (for *ésser*). The different behavior of these verbs regarding preposition incorporation has important consequences for their syntactic properties. Empirically, it accounts for why these two verbs appear in complementary distribution as well as for the fact that *haver-hi* appears in impersonal sentences, as opposed to *ésser*. From a theoretical perspective, a lot of the differences between the syntactic behavior of these two verbs are related to Case, in a system where AGRs and AGRo may be active or inactive for the checking of Case-features (following Chomsky 1993). The incorporation of the abstract preposition to the verb in the *haver* construction provides this verb with the possibility of checking accusative Case, contrary to *ésser*,

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(25) The reader is referred to Davis and Demirdache (1997) for recent discussion on how to accommodate these conflicting results.

which lacks a Case-feature, so that AGRo is inactive. Conversely, AGRs with *haver* may not check nominative Case. In fact, in the analysis developed by Rigau, AGRs is split so that nominative checking is associated with a PersonP, while NumberP is the phrase which checks whatever feature is relevant for the satisfaction of the Extended Projection Principle (a D-feature in Chomsky 1995). Different specifications of these two heads allow Rigau to account for a number of differences among Catalan dialects concerning these structures, which is line with current ideas that variation across languages results from different specifications of morphological features in the Lexicon. The analysis is extended to constructions with transitive and intransitive light verbs, supporting the idea that certain unergative Vs may act as unaccusatives when they co-occur with locative elements (see Torrego 1988 and Hoekstra & Mulder 1990). A conclusion that follows from Rigau's approach in this paper is that there is not a class of unaccusative verbs; what we have, instead, is a set of unaccusative argument structures, which can be the result of preposition incorporation to unergative verb structures.[26]

Another of the papers in this volume which deals with aspects of Romance morphosyntax from the point of view of the relation between lexical and syntactic structures is DEMONTE & VARELA's "Spanish Event Infinitives: from Lexical Semantics to Syntax and Morphology." Their concern is to specify how the lexical semantic properties of event infinitives determine their morphological and syntactic properties. It is by postulating the existence of an event [+e] feature as part of the morphological specification of the infinitive head and the presence of an event argument in the structure that Demonte & Varela make this relation explicit. Their proposal is that the event feature of the nominal infinitive has to enter a checking operation in the syntax against a matching feature in a functional head (F), within a framework like that developed by Chomsky (1995) in which morphological features enter checking operations in the syntax. This analysis allows them to account for a variety of semantic and syntactic properties of the construction, as well as for the differences between event infinitives and related structures with action nominals. Semantically, the two readings associated with constructions with event infinitives (concrete-existential and habitual-manner) are the result of different linking relations involving the event argument and an existential or a generic quantifier: if the event argument in [SPEC, FP] is bound by an existential quantifier, the concrete-existential reading obtains; if this element is bound by a generic quantifier, the habitual-manner reading obtains. The semantic properties of infinitive heads, as well as the syntactic structure in which they appear (with no AgrP between DP and NP), allow Demonte & Varela to explain why only manner adjectives are found in these constructions, while speaker-oriented and subject-oriented adjectives are excluded. Syntactically, one of the most interesting contributions of this paper is that the infinitive head is unambiguously classified as a nominal head; i.e. the display of both nominal and verbal properties of the structure which led to postulate a 'neutral' categorial specification of the infinitive head in previous analysis is handled here by resorting

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(26) Rigau's proposal that person and number agreement are checked in different positions is in accord with recent work on split-ergativity and on well-known restrictions on the possible morphological combinations of person agreement markers (see, in particular, Albizu 1997, this volume, Fernández 1997, and Ormazabal 1997).

to the morphological specification of nominal elements. Crucially, infinitive heads are nouns with an event feature as part of their morphological import in the Lexicon. The categorial classification of the infinitive head as a noun allows Demonte & Varela to account for the fact that full lexically realized DPs requiring accusative Case or accusative clitics are banned in these structures, as opposed to bare nouns which incorporate into the infinitive head and may appear as internal arguments of the infinitive. The nominal eventive character of the infinitive explains also why negation cannot appear in these structures in Demonte & Varela's approach, thus accounting for a wide variety of empirical facts concerning event infinitives in Spanish.

III. The third group of papers address the issue of parametric variation, in particular the split between accusative and ergative languages and the polysynthesis parameter, from the point of view of the morphology-syntax interface.

In "Nested Paths in Syntactically Ergative Languages", MURASUGI explores the ergativity parameter within the current view that the ergativity split derives from the differences in the movement of argument NPs from VP to the position where they are assigned Case (that is, the idea that ergative languages differ from accusative languages regarding the particular movements undergone by NPs and the landing sites they reach). Murasugi's proposal thus has to be understood within the minimalist hypothesis that syntactic differences among languages can be derived from morphological factors. Her proposal is that while there is no difference in the structure and derivation of intransitive clauses in ergative and accusative languages (in both types of languages, the intransitive subject (S) raises to [SPEC, IP]), the split between ergative and accusative languages, derives from differences in the derivation of transitive clauses. In accusative languages, the transitive subject (A) raises to [SPEC, IP], and the object of a transitive verb (O) raises to the specifier of a projection located in between IP and VP, namely to [SPEC, Tr(ansitive)P]. Accusative languages thus exhibit crossing paths in the movement of argumental NPs. The central claim of her paper is that in ergative languages the movement of A and O is reversed: O raises to [SPEC, IP], a functional projection higher than [SPEC, TrP], the position where A moves. Consequently, in contrast with accusative languages, syntactically ergative languages exhibit nested paths movement (see Chomsky 1993).

Her particular analysis concerning the differences in the movement realized by A and O in ergative and accusative languages can also explain the differences displayed by the two types of languages regarding a wide range of morphological and syntactic phenomena. In particular, it explains why in ergative languages which exhibit double verbal agreement A-agreement is closer to the verb than O-agreement, while the reverse situation seems to obtain in accusative languages. It also explains some puzzling differences in scope displayed by the two type of languages. The answer to why the A argument in ergative languages behaves like the O argument in accusative languages —allowing both narrow and wide scope readings—, and why the O argument in ergative languages show scopal properties like those of the A in accusative languages is based on structural differences in the positions occupied by argumental NPs at the level of LF. Murasugi's analysis further explains why relativization in participial relative clauses in ergative languages is generally restricted to S and O, and not to A and S as in accusative languages. Following a long tradition,

Murasugi derives why ergative languages have nested paths while accusative languages exhibit crossing paths from a difference in the Case assigning properties of the verb. She argues that in ergative languages, the verb does not assign Case; thus, only Shortest Movement will determine how argument NPs will move to their Case assigning positions. In accusative languages, in contrast, the verb can assign structural Case. Due to a condition on the way in which the verb can assign Case in a spec-head relation, the object has no option but to move to [SPEC, TrP] in accusative languages. Thus, in accusative languages, the assignment of Case by V overrides Shortest Movement, resulting in crossing paths. What follows from here is that Shortest Movement applies only in cases where a choice of derivations is available. This analysis predicts that whenever there is no Case condition relevant to A'-movement in accusative languages, we expect to find nested paths: the Superiority Effects found in accusative languages seem to confirm this prediction. Murasugi's analysis shares with Mahajan 1990, Murasugi 1992, Bittner 1994, and Bittner & Hale 1996, among others, the assumption that in ergative languages O is higher than A at some point in the derivation, and constitutes a valuable competing analysis to the alternative approach which assume that in ergative languages the transitive subject (A) raises higher than the object (O) —as proposed in Bobaljik (1992), Chomsky (1993), and Albizu (this volume), among others.

In "Parametric Variation in Determiner Systems: Salish vs. English", MATTHEWSON addresses the issue of the polysynthesis parameter, and more in particular of the parametric differences between English and Salish (a family of radical head-marking, predicate initial Amerindian languages) through the examination of the languages' respective determiner systems. It is proposed that Salish differs from English in lacking all presuppositional determiners, including definites and quantificational determiners. Salish languages, instead, encode on their determiners the existential force or otherwise of overt arguments. In order to account for the Salish-English split, Matthewson introduces a binary parameter, the *Common Ground Parameter*, which divides human languages into those whose determiners may access the common ground of the discourse (English), and those whose determiners may not (Salish). In line with the view that confines parametric variation to lexically defined properties (Borer 1984, Chomsky 1995), she argues that the Common Ground Parameter can be stated at the level of the Lexicon. If the Lexicon is the only locus of parametric variation, what we expect is that the ability of certain syntactic structures to induce presupposition will be universal; the variation will be restricted to whether particular items, such as determiners, may induce presuppositions. This seems to be confirmed by the fact that Salish can access the common ground of discourse: presupposition can be induced by making use of syntactic constructions such as clefting. With regard to how children specify the value of this parameter, Matthewson proposes that the default setting of the Common Ground Parameter is negative: children start by assuming a Salish-type system and do not switch to an English-type system until positive evidence is provided. The triggering element for such switching will be any quantificational determiner. An interesting feature of Matthewson's analysis is that the Common Ground Parameter has implications beyond the determiner system. In particular, her approach is consistent with Salish deictic system, which is speaker (and not hearer) oriented. The Common Ground Parameter also predicts that if any

morphological marking of an event is present it will only express speaker knowledge, a prediction that seems to be in accordance with the facts. A distinctive feature of Matthewson's analysis is that, in contrast with previous approaches to the split between English-type and Salish-type languages such as Jelinek (1995) and Baker (1995), the differences between these languages are not assumed to follow from the specification of a single, macro-parameter which seeks to tie syntactic and semantic phenomena to morphological features such as head marking. Matthewson discusses these alternative analyses and argues that multiple parameter settings are needed to account for all the features of Salish languages. This conclusion is consistent with Hale (1985) and Speas (1990), for whom there is no single parameter which can derive the various properties usually associated with 'non-configurationality'.

<p align="center">* * *</p>

The papers that follow thus offer an overview of new trends in the morphology-syntax connection through the investigation of a wide range of empirical facts in a broad sample of languages and address theoretical issues which are at the center of debate and discussion in current linguistic theory.

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GENERALIZED PERSON-CASE CONSTRAINT: A CASE FOR A SYNTAX-DRIVEN INFLECTIONAL MORPHOLOGY[1]

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1. Introduction

The Person-Case Constraint (henceforth PCC) is a morphological condition against particular combinations of the agreement markers cross-referencing the direct object and the indirect object. Such a constraint can be stated informally as in (1):

(1) *Person-Case Constraint:* If DAT, then ACC(ABS) = 3rd

(Bonet 1994: 36)

By (1), an agreement marker cross-referencing the direct object cannot be 1st or 2nd person in the presence of a dative agreement marker corresponding to the indirect object.[2, 3] The PCC is illustrated in (2) and (3) below with examples from Catalan and Basque respectively:[4]

(2) As Bonet (1991) points out, some speakers exhibit a weaker version of the constraint, for they allow combinations of 1st and 2nd person ACC and DAT clitics. Consider the following examples of Spanish:

(i)	a.	*Te*	*me*	recommendaron	
		2sgAcc	1sgD	recommend-3plNom	
		'They recommended you to me'			
	b.	**Me le*		recommendaron	
		1sgD 3sgAcc		recommend-3plNom	
		'They recommended me to him'			

According to the examples in (1), the PCC in its weak version would be reformulated as follows:

(ii) *The Person-Case Constraint (weak version):* If DAT=3rd, then ACC(ABS)=3rd

In this article we deal mainly with the strong version of the constraint.

(3) For simplicity, throughout this article we will be using the traditional terminology A-argument to refer to subjects of transitive verbs, P-argument for direct objects of transitive verbs, and finally S-argument for the sole argument of unaccusative verbs. In addition, expressions in the text such as 'ergative A-agreement', 'absolute A-agreement', 'absolute P-agreement' and 'absolute S-agreement' should be understood as abbreviations that stand for 'ergative affix that is cross-referenced with the A-argument', and so on.

(4) To make their interpretation easier, the relevant elements in the examples will be presented in italics throughout the article. We use the following abbreviations in the glosses: E=Ergative; A=Absolutive; A_E=Displaced Ergative; D=Dative; D_{ALLO}=Dative allomorph of an Allocutive; Nom=Nominative; Acc=Accusative; sg=singular; pl=Plural; masc=Masculine; fem=Feminine; Pres=Present; Pas=Past; Neg=Negation; Comp=Complementizer; imp=Imperative; cl=Clitic; refl=Reflexive; inh.cl=Inherent clitic; eth=Ethical-Dative; Aux=Auxiliary; io=Ditransitivizer affix.

(2)   a. En Josep, *me   'l   va recomanar   la Mireia
          The Josep, 1sgD 3sgAcc recommended(3Nom) the Mireia
          'She (Mireia) recommended him (Josep) to me'

      b. *A en Josep, *me   li   va recomanar   la Mireia
          To the Josep, 1sgAcc 3sgD recommended(3Nom) the Mireia
          'She (Mireia) recommended me to him (Josep)'   (Bonet 1991)

(3)   a. Azpisapoe-k etsaia-ri   misilak   saldu *d*-i-zki-*o*-te
          Traitors-E   enemy-D missiles-A sell   3A-Aux-plA-3sgD-3plE
          'The traitors have sold missiles to the enemy'

      b. *Azpisapoe-k ni   etsaia-ri   saldu *n*-(a)i-*o*-te
          Traitors-E   me-A enemy-the-D sell   1A-Aux-3D-3plE
          'The traitors have sold me to the enemy'

In (2) and (3), examples (a) and (b) are ditransitive clauses that contrast in the person of the ACC (or ABS) agreement marker: while the sentences with 3rd person direct objects in (a) are fine, 1st person direct objects in (b) render their sentences ungrammatical.

Be it as accurate as it may, the generalization in (1) is simply a description of the data with no explanatory power whatsoever. Our aim in this article is precisely to take a step beyond the bare characterization of the data and to address some fundamental issues concerning the very nature of the constraint. The conclusions reached in the investigation will strongly favor a syntactic model of Inflectional Morphology, under which Inflectional Morphology is derived in the Syntax.

The present article is organized as follows. Section 2 presents the relevant corpus of data in Catalan and Basque, and at the same time deals with the question of the level of application of the PCC. The discussion in the section offers mixed results: on the one hand, the failure of strong pronouns to trigger the constraint, together with the lack of PCC-effects in infinitival clauses, neatly establishes that the phenomenon applies at the Morphological Component (hereafter MC); on the other, the existence of exceptions such as ethical-datives, inherent clitics, subjects of un-accusative verbs, etc., to the constraint reveals the sensitivity of the PCC to typic-ally syntactic properties such as argumenthood or subjecthood.

Section 3 discusses the property of the 'uni-directionality' of the constraint: ACCs never impose restrictions on the person of the DAT. It is argued that such a property is determined by a *c-command* condition that governs the application of the PCC: the trigger of the constraint must c-command the target. This condition is formulated in our Generalized Person-Case Constraint (GPCC), which also covers other similar constraints attested in Southern Tiwa (ERG-DAT, ERG-ACC. Cf. note 6). The proposal relies on the assumption that morphosyntactic features are organized into hierarchical structures in the Morphology. We claim that hierarchical structures at the MC are derived in the Syntax, since it is shown that syntactic operations such as Move-α, which may reverse c-command relations at this level, may have an impact in the application of the PCC (i.e. unaccusative verbs in Standard Basque). The contingency of the c-command relations among agreement features in the Morphology on syntactic movements of arguments/adjuncts will also support our ad-

ditional conclusion that such agreement features are carried along by arguments/ adjuncts in the Syntax instead of by the traditional Agr functional heads.

Section 4 tackles the issue of the 'unmarkedness' of the PCC with respect to other (potential) constraints of the same sort: the PCC, unlike other constraints that are never or hardly ever found across languages, is a widespread (if not universal) condition.[5,6] The property is captured here by introducing *locality* as an additional morphological condition. We will define *locality* in terms of *minimal domains*, adapting Chomsky's (1993, 1995) definition of the latter notion. Thus, the unmarkedness of the PCC stems from the co-occurrence of DAT and ACC (ABS) agreement markers within a same minimal domain. This locality condition is introduced in our definition of the Person-Case Constraint (PCC), a particular instance of the GPCC. Our formulation of the PCC restricts the over-predicting power of the GPCC and limits the application of the constraint to exactly the cases found in Catalan and Basque. It is also argued that, unlike *c-command*, the *locality* condition is subject to parametric variation.

2. The Person-Case Constraint (PCC): morphology or syntax?

The first issue that comes to mind when considering the phenomenon of the PCC is that of its level of application. So far most analyses —Perlmutter 1974, Bonet 1991, 1994, Laka 1993a— on the topic have consistently agreed on the morphological character of the constraint; yet they have also been aware of the syntactic flavor of certain particular contrasts related to the application of the PCC. Our presentation in this section will be based on these authors' work to a large extent, adopting most of their arguments and adhering to their general conclusion above mentioned. Additional arguments will be added on our part in order to reinforce the observation that the PCC is sensitive to syntactic distinctions. The relevant corpus of data will be introduced progressively as we proceed with our argumentation in the section. Most data correspond to Catalan and Basque, although in general it is not difficult to build similar examples in other languages. Consider first the evidence for the morphological nature of the PCC.

(5) The constraint is known to be active in a heterogeneous group of languages that includes Arabic (Bonet 1991), Basque, Catalan, Chukchi, German, Georgian, Spanish, Southern Tiwa, Tzotzil, Warlbiri (Perlmutter 1971) and Yimas (Foley 1986) among others. For that reason, the PCC —or the weak version of the PCC, to be precise (cf. note 2)— is very likely a universal constraint. The universality of the constraint cannot be accepted without certain reservations, however. The Basque philologist Lafon (1944: 397) noticed the existence of more than a dozen of examples in Basque old literary works where the constraint is directly violated in any of its two versions: for instance, the offending auxiliary form *g-i-o-tza-Ø*, 1A-Aux-3D-plA-3E is attested by this author. The validity of these examples is nevertheless unclear, as pointed out by Laka (1993a), for Basque philologists still debate on whether these forms were literary creations or forms that ever existed in the language.

(6) Other combinatorial restrictions can be found, for instance, in Southern Tiwa. Besides the PCC, this Ergative language displays two additional constraints involving ERG agreement markers: See Rosen 1990 for examples of these constraints.

—ERG-ABS interaction: With a transitive verb, if the ERG marker is 3rd person, then the ABS cannot be 1st or 2nd person.

—ERG-DAT interaction: With a ditransitive verb, the ERG marker cannot be 3rd person.

The markedness of these restrictions is shown, just to mention one example, by Basque, another Ergative language which displays none of the two.

2.1. The PCC is a condition on X°-s

2.1.1. A well-known property of the PCC (Bonet 1991) is the fact that, for this constraint to hold, both the direct object and the indirect object have to be phonologically weak (that is, phonologically weak pronouns, clitics or agreement affixes). The following contrasts in Italian, (4), and Spanish, (5), illustrate this condition. Unlike the dative clitics *gli* and *le* in the (b) examples which activate the constraint, the phonologically strong pronouns *loro*[7] and *(a) él* in the (a) examples fail to do so. The Italian sentences are from Cardinaletti & Starke (1994: 17), while those of Spanish are mine based on similar examples from Bonet (1994):

(4) a. Gianni *mi*   ha presentato *loro*
       Gianni 1sgAcc has presented   to-them
   b. *Gianni *mi*   *gli* ha presentato
             1sgAcc 3sgD
       'Gianni presented me to him'

(5) a. *A él me*   recomendó   Juan
       To him 1sgAcc recommend-3sgNom Juan
   b. *Juan *me*   *le*   (le me) recomendó
            1sgAcc 3sgD   (3sgD 1sgAcc)
       'Juan recommended me to him'

This property strongly indicates that the PCC requires that both internal arguments be morphologically part of the same verbal complex.[8] This observation

(7) This is not to be confused with Cardinaletti & Starke's (1994) independent characterization of *loro* as a weak pronoun. This is so because these authors' characterization is not established solely on morpho-phonological grounds as opposed to ours, but relies heavily on syntactic arguments.

(8) At first glance, Tzotzil constitutes a potential counter example to this condition. Tzotzil is an Ergative language with two sets of person agreement affixes on the verb: one (set B) marks agreement with absolutives — namely objects of transitive verbs and subjects of unaccusative verbs; the other (set A) marks agreement with ergatives —that is, subjects of transitive verbs— and genitives. In ditransitive clauses (always suffixed with *-be*), such a pattern is modified in that set B affixes must cross-reference the indirect object instead of the direct object, as shown in (i). The Tzotzil data presented next are from Aissen (1987):

(i)   Meltzan -b- [o] *on*   lek   *i*   *garafon-e*
     fix   io   imp   B1sg good the jug   cl
     'Fix the jugs carefully for me'

Crucially, ditransitive constructions of this type are only allowed in the language when the direct object is 3rd person. Compare the following two sentences: in (iia) a ditransitive verb takes the 1st person pronoun *vo7on* 'me' as its direct object; in (iib) *vo7on* 'me' is dropped and the sentence is interpreted then as taking a 3rd person direct object. Of these two, only (iib) is a grammatical sentence:

(ii) a. *7i- *y-* ak'   -be *vo7on* li   7antzetik   -e   b. 7i- *y-* ak'   -be li   7antzetik -e
     Cp A3 give   io   me   the women cl   'They gave it to the women'
     'They gave me to the women'

As shown in (ii), Tzotzil behaves in accordance with the PCC in spite of the phonologically strong nature of the pronominal element *vo7on* 'me', contradicting our observations regarding Spanish and Italian. Two different solutions come to mind: either we allow for the existence of some parametric variation as to the morphological or syntactic nature of the constraint, or we stick to our initial assumption —namely that both direct object and indirect object have to be morphologically specified on the verb— and extend it to the Tzotzil case. Because of

amounts to saying that the PCC is a morphological constraint rather than a restriction on the thematic representation of the sentence.

2.1.2. Indeed, the correctness of this conclusion is further bolstered up by the inertness of the constraint in non-finite clauses in languages such as Georgian and Basque, as noted by Bonet (1991) and Laka (1993a) respectively. In these two languages, finite and non-finite verbs differ (at least) as to the realization of agreement markers on the verb: unlike finite forms, non-finite verbs lack overt agreement marking. Crucially, in both languages such an absence of agreement marking is on a par with the cancellation of the PCC-effects. Compare the following sentence of Basque, which contains a nominalized non-finite subject clause, with that in (3b) above. Example (6) has been adapted from Laka (1993a):[9]

(6)   Gaizki iruditzen zait   [zu-k *ni*   *etsaia-ri*   *saltzea]*
       wrong seem   3A-have-1D   [you-E me-A enemy-the-D sell-Nominalizer]
       'Your selling me to the enemy seems wrong to me'

The case of Basque and Georgian raises a very important issue that must be addressed here before we proceed any further. The relevant question is the following: Is the lack of overt agreement Morphology or on the contrary the lack of agreement Morphology altogether what blocks the application of the PCC in (6)? Some Chukchi data will help us deciding on this matter.

According to Comrie (1981: 185), in most tense-aspects Chukchi displays a two-way verbal agreement system that cross-references A- and P-arguments, leaving the DAT argument unmarked on the verb. This is true of all verbs in the language except for the verb *yə-l* 'give', which may agree with the DAT argument under certain conditions that have to do with the animacy hierarchy. Crucially, the effects of the PCC are visible in Chukchi only with the verb *yə-l* 'give'. Thus, the fact that this verb, and only this verb, exhibits the PCC is anything but accidental. The whole puzzle fits if we assume that the morphosyntactic specifications of the DAT are part of the verbal X^{o}-unit just in the case of *yə-l* 'give', as demonstrated by the option of overt agreement with this argument. The non-application of the PCC with the rest of verbs follows directly then: the other verbal complexes lack DAT Morphology altogether. On the other hand, since the observance of the constraint with *yə-l* 'give' is obligatory regardless of the overt realization of agreement with the DAT argument, this indicates that it is the presence or absence of agreement Morphology on the verb at the Morphological Component, and not its overt phonological realization, what counts for the application of the PCC.[10]

The implications of our discussion on Chukchi are apparent for Basque and Georgian: as shown by the lack of PCC-effects in (6), non-finite verbs may bear no overt nor covert agreement morphology in these languages.[11]

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its generality, we take the latter to be the right approach. Under this analysis, we will claim that Tzotzil ditransitive verbs bear phonologically unrealized ABS agreement features that are subject to the PCC.

(9) See Bonet (1991: 189-191) for examples in Georgian.

(10) A similar point is made by Bonet (1991: 190) based on Georgian data. See also note 8 for our parallel treatment of the effects of the PCC in Tzotzil.

(11) This conclusion calls for a reconsideration of the old issue of the nature of null pronominals in Basque non-finite clauses (cf. Ortiz de Urbina 1989, Zabala 1995).

2.2. The PCC is more than a morphological constraint

The paradigm of examples presented so far hints at a purely morphological treatment of the PCC. Under such a view, it would simply be stipulated that particular combinations of DAT and ACC (or ABS) agreement markers are barred by some morphological principle of the sort of (1). In this section, a closer look at other cross-linguistic data will pull this initial impression apart and will suggest that on the contrary this restriction is, partially at least, of a syntactic nature. Thus, this section will show that the constraint is sensitive to the c-command relations established in the Syntax among agreement features.

The four arguments presented in this section fall under two different classes: they are either instances of 1st or 2nd person ACC (or ABS) that escape the PCC, or cases where the presence of a DAT morpheme fails to trigger the constraint.

2.2.1. Argumental vs. Non-Argumental agreement markers. Several authors (Perlmutter 1971 for Spanish and French, Bonet 1991 for Catalan, Laka 1993a for Spanish) have observed that 1st or 2nd person object clitics are not always incompatible with DAT clitics. Indeed, ethical-datives and inherent clitics block the effects of the PCC, as illustrated by the Catalan examples (7a) and (7b) respectively, borrowed from Bonet (1991: 179):

(7) a. *Me   li* van dir   que havia   suspès l'examen
         1-eth. 3-D said-3Nom that had-3Nom failed the exam
         'They told him (on me) that he had failed the exam'
     b. *Te   li* vas declarar?
         2-inh.cl. 3-D declared
         'Did you declare your love to him/her?'

The grammaticality of the sequences *me li / te li* in (7a-b) contrasts with the ungrammaticality of the sentence yielded by these same strings when the 1st/2nd person clitic is a 'canonical' object (in (2b) above) or a true reflexive (in (8) below). Consider the following example of a true reflexive in Catalan found in Bonet (1991: 192):[12]

(8) ??A en   Pere, *me   li*   vaig recomanar (jo mateix) ahir
     To   the   Pere, 1st-refl 3rd-dat recommended (1self)   yesterday
     'I recommended myself to Pere yesterday'

The comparison between (7) and (8) clearly indicates that there is nothing intrinsically wrong with the sequence of clitics itself. Rather, the opposition has to do with the thematic, (2b) and (8), or non-thematic, (7a,b), status of *me / te*. Yet, one may argue that these clitic clusters are not morphologically equivalent and that finer morphological differences are ultimately responsible for such an asymmetry. In other

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(12) According to Bonet, there is some variation among Catalan speakers as to their judgements on sentences with inherent clitics, (7b), and with true reflexives, (8a). To the best of my knowledge, the same is true with respect to the corresponding sentences in Spanish. Be that as it may, the existence of such a variation strengthens rather than weakens the point we are making in this section, insofar as it is the unclear syntactic status of reflexives (especially in the case of inherent clitics), as opposed to their well-defined morphological characterization, that is responsible for such a variation.

words, inherent clitics and ethical-datives could be treated as encoding a [Dative] morphological Case feature, as opposed to 'canonical' objects and true reflexives, which would have an [Accusative] specification. Under this solution, only the latter would eventually conform to the DAT-ACC combination ruled out by the PCC.

However, a morphological explanation of the asymmetry along these lines is neither empirically adequate nor theoretically costless. Datawise, clusters of two argumental DAT clitics obey the PCC in French, as noted by Bonet (1991: 196). Such combinations may be found in this language in causative constructions in which the embedded verb subcategorizes for a DAT argument, like for instance *téléphoner*.

(9)   *Cette nouvelle *nous lui*   a   fait   téléphoner
      This   news   1plD 3D has made telephone
      'This news made us phone him/her'

As for its theoretical burden, under such an approach the tight correlation existing between the argumenthood of the clitics and their abiding by the PCC becomes accidental. In general, chance correlations found in a particular language are very likely not to be repeated in others. Therefore, it comes as quite a surprise that Basque displays a similar correspondence to that in Catalan. Let us turn now to the Basque case.

In addition to ergative, absolutive and dative agreement markers, inflected verbs in Basque may bear a fourth agreement affix called 'allocutive' marker (ALLO) that refers to the addressee of the speech situation. 'Allocutive' agreement is always 2nd person (masculine or feminine) in Basque. Morphologically, there is no specific set of affixes in the language for the expression of allocutivity, but they are realized by means of either ERG affixes or most generally DAT affixes.[13] Example (10a) below presents a normal transitive sentence in Basque with the inflected transitive auxiliary agreeing with its subject and object; example (10b), on the other hand, introduces the same transitive sentence with the additional ALLO marker on the verb, this being marked by the dative affix -*k*-:

(10)   a.   Peruk ni   kalean   ikusi *n*-au-Ø
           Peru-E I-A street-the-in see   1sgA-Aux-3sgE(Pres)
           Peru has seen me in the street'
       b.   Peruk ni kalean ikusi   *n*-ai-*k*-Ø
                                    1sgA-Aux-2D$_{ALLO}$ (masc)-3sgE(Pres)
           'Peru has seen me in the street (male addressee)'

In (2b), it was shown that in this language DAT agreement markers are incompatible with 1st and 2nd person ABS. Crucially, the same combination does not fall under the PCC when the dative is an ALLO marker -*k*-. Again, the asymmetric pattern of allocutives and 'true' datives adheres to the syntactic distinction between thematic and non-thematic clitics observed above. More importantly yet, unlike

(13) The sets of ERG and DAT markers are both the same in Basque with the only exception of 3rd person singular affixes. Despite this isomorphism, the dative character of -*k*- in (10b) is revealed indirectly by the presence of a pre-dative infix -*(k)i*- that surfaces attached to the verb stem only in the environment of a DAT marker. To illustrate this, compare the form *nau* in (10a) with *na-i-k* in (10b). Other occurrences of such a pre-dative infix can also be found in examples (3) and (11) in the text.

Catalan inherent clitics and ethical-datives, the Basque paradigm leaves no room for invoking differences regarding the morphological Case of the agreement markers involved, putting this alternative to rest.[14]

2.2.2. Subjecthood and PCC. Additional evidence for the necessity of a (partially) syntactic account comes from the behavior of 'displaced ergatives' (EDs) in Basque in relation to the constraint. In this language, ERG subjects are generally cross-referenced by a set of ERG affixes, which appear on the right edge of inflected verbal forms, such as -*zu* in (11a); however, in very particular morphological environments, the same agreement relation is marked by ABS affixes, not ERG affixes, which are placed on the opposite edge of the verb, such as *z*- in (11b). Because of this ordering alternation, the phenomenon is known as 'Ergative Displacement' (Laka 1993a) in the generative literature on the topic. This change only affects verbal case marking, and not nominal case marking. The sentences below illustrate this alternation. Example (12) with an unaccusative verb is introduced to show that the preffix *z*- in (11b) is in fact an ABS marker:

(11)   a. Zuk   Anderri kontzerturako sarrera bat oparitu   d-i-o-*zu*
           You-Esg Ander-D concert-the-for ticket   one present with 3sgA-Aux-
                                                                   3sgD-2sgE(Pres)
           'You have presented Ander with a concert ticket'
       b. Zuk Anderri kontzerturako sarrera bat oparitu *z*-eni-*o*-n
                                                        2sgA$_E$-Aux-3sgD-Past
           'You presented Ander with a concert ticket'

(12)   Zu   berandu iritsi   *z*-ara   bilerara
       You-Asg late   arrive   2Asg-Aux meeting-the-to
       'You have arrived late to the meeting'

The relevant example is (11b). Crucially, the ED is not targeted by the PCC in the context of a DAT marker, despite its morphological realization as ABS. Again, Morphology and PCC do not go hand in hand.

A purely morphological solution to the problem is still feasible, however, under models that embrace rule-ordering —as for instance Halle & Marantz's (1993a, b) Distributed Morphology theory. Under such approaches, the asymmetry would follow if we would assume that the PCC takes precedence over a rule changing the underlying [Ergative] specification of the displaced ergative into [Absolutive]. (See Albizu (1995), Bonet (1991) and Eguren (1995) for a treatment of Ergative Displacement along these lines). The pattern of ABS subjects of unaccusative verbs in this language indicates that, albeit technically correct, such an analysis is not a very illuminating solution, however. Let us consider these data.

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(14) Basque allocutives behave the same as inherent clitics and ethical-datives in Catalan in that they do not violate the constraint when combined with another DAT agreement marker, as shown below:

(i)   Pellok Mireni   gezurra esan z-i-*o*-*k*-Ø
      Pello-E Miren-D lie-A   tell 3sgA-Aux-3sgD-2D$_{ALLO}$/masc-3sgE
      'Pello has told Miren a lie (male addressee)'

Since Basque is an Ergative language, both objects of transitive verbs (P-arguments) and subjects of unaccusative verbs (S-arguments) are underlyingly specified the same with respect to Case —and so are the affixes they agree with. Indeed, the two are always cross-referenced by ABS affixes. Accordingly, any strictly morphological treatment of the PCC, including the 'rule-ordering' type of analysis sketched above, would predict a uniform pattern for the two with respect to the constraint. Contrary to expectations, the language discriminates the two by allowing 1st and 2nd person ABS agreement markers to co-occur with (argumental) DAT agreement only in the case of S-arguments.[15,16] Compare the examples (13) and (3b), the latter being repeated here as (14) for convenience:

(15) This is not so in some varieties of Biscayan Basque (Elordui 1995, Elordieta p.c.), where both P-agreement and S-agreement —namely agreement markers cross-referencing P- and S-arguments— comply with the constraint. In such varieties, intransitive verbs display the usual ABS-DAT agreement pattern only when S-agreement is 3rd person; when the ABS marker is 1st or 2nd person a repair-strategy is used to avoid the PCC whereby the dative argument takes an oblique form and its agreement marker is dropped from the verb. This contrast is illustrated in (i)-(ii). Example (iib) has been taken from Elordui (1995: 168):

(i) a. Pello   Mireni   juntau   *j*-ak-*o*   (ii) a. *Juntau   *n*-intza-*ke*-n
       Pello-A Miren-D approach 3sgA-Aux-3sgD   Approach 1sgA-Aux-3plD-Pas
       'Pello approached to Miren'   b. Juntau   *n*-intze-n   beraiengana
                                          1sgA-Aux-Pas them-to
                                          'I approached to them'

The same paradigm as in these Biscayan varieties of Basque is also found in other Ergative systems such as Southern Tiwa. We refer the reader to Bonet (1991) and Rosen (1990) for examples and details on the agreement marking system of the latter.

(16) In fact, the picture is not as clear as it might look at first sight. For most of the speakers we have consulted with, grammaticality judgements with respect to intransitive predicates vary with the lexical verb chosen. Thus, the combination DAT-ABS yields highly degraded sentences with verbs like *gustatu* 'to like' and *iruditu* 'to look', as illustrated in (ib) and (iib) respectively (cf. (13) in the text):

(i) a. Pello   Mireni   baldarra iruditu   *z*-ai-*o*
       Pello-A Miren-D clumsy   look-like 3sgA-Aux-3sgD
       'Pello looked clumsy to Miren'
    b. */??Ni Mireni baldarra iruditu *n*-atzai-*o*
         I-A   1sgA-Aux-3sgD
         'I looked clumsy to Miren'

(ii) a. Mireni   gozokiak gustatzen *z*-ai-zki-*o*   b. */??Ni Mireni   gustatzen *n*-atzai-*o*
       Miren-D candies-A like   3A-Aux-Apl-3sgD   I-A Miren-D like   1A-Aux-3sgD
       'Miren likes candies'   'Miren likes me'

At this point we have no coherent explanation for the asymmetry. We will simply note that such a contrast overlaps with another asymmetry observed by Elordui (1995) in Western Biscayan Basque regarding the optionality of dative arguments —and of DAT agreement— with these verbs. Interestingly enough, in this variety, while dative arguments (and DAT agreement) may optionally be dropped with movement verbs such as *hurbildu* 'to approach' (in (13) in the text), they are obligatory with *gustatu* 'to like' and *iruditu* 'to look'.

As suggested by an anonymous reviewer, the above contrasts may have to do with the nature of the thematic role (Goal vs. Experiencer) assigned to the dative argument in each case. The distinction Goal vs. Experiencer has already been held responsible for similar phenomena in other languages, as for instance the optionality of Clitic Doubling in Spanish:

(iii) a. *(Le)* di   el libro   a   Juan   b. *(Le)* gustó   el libro   a   Juan
       3sgD give-1sgNom-Past the book to Juan   3sgD like-3sgNom-Past the book to Juan
       'I gave the book to Juan'   'Juan liked the book'

(13)   Ni Peruri   hurbildu   *n*-atzai-*o*
        I-A Peru-D approach   1sgA-Aux-3sgD(Pres)
        'I approached to Peru'

(14)   *Azpisapoe-k ni   etsaia-ri   saldu *n*-(a)i-*o*-te
        Traitors-E   me-A enemy-the-D sell   1A-Aux-3D-3plE
        'The traitors have sold me to the enemy'

The grammaticality of (13) groups S-arguments together with EDs (in (11b)), yet the 'rule-ordering' account only holds for the latter. Hence, an independent solution would have to be devised for the unexpected pattern of (13). A syntactic approach, on the contrary, clears the path for a uniform analysis, for it may exploit the fact that the two (i.e. ABS S-arguments and ABS A-arguments) share the property of being (surface) subjects, in contrast to ABS P-arguments which are objects.[17] In fact, the resort to the opposition between subjects and objects uncovers a deeper and more general source of asymmetries regarding the PCC: this is the structural relation of c-command. Subjects and objects differ in that the two enter into distinct c-command relations with datives: while subjects c-command indirect objects, direct objects are c-commanded by indirect objects.[18] Under this alternative, c-command of ABS (ACC) by DAT becomes a pre-requisite for the application of the PCC. The asymmetries earlier ascribed to the argumenthood of clitics and/or agreement affixes (in section 2.2.1) will also be re-stated in these terms in section 3, where the proposal will be presented in more detail.

The solution we are putting forward here, under which syntactic asymmetries (i.e. distinct c-command relations of subjects and objects with respect to indirect objects, etc.) are allowed to have an impact on the application of the morphological process of the PCC, calls for a non-lexicalist view of inflectional Morphology under which the internal structure of inflected X° elements has to be created in and determined by the Syntax.

2.2.3. Linear ordering and PCC. Some unexpected paradigms in Greek and Swiss German may also come in support of our proposal here. Bonet (1991: 188, fn. 12), who credits Iatridou and Leder respectively for bringing these data to her attention, points out that in these two languages the violability of the PCC is sensitive to the linear order of ACC and DAT agreement markers. Let us illustrate this case with the Swiss German data, from Bonet (1991).

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(17) Bonet (1994: 38) hints at this alternative but leaves the option unexplored.

(18) The syntactic configuration of direct and indirect objects relative to each other is yet controversial in the current linguistic theory, even though in recent years a good deal of evidence has been presented in favor of the position assumed in the text. See Bobaljik (1995) and references therein. We would like to mention three arguments among those put forth by Bobaljik (1995): first, the phenomenon of VP-fronting in German; second, the fixed order of DO and IO relative to each other in Dutch; and third, the minimality effects triggered by in situ IOs on the overt movement of DOs in Icelandic and Swedish. We could also extend the list with a series of arguments of our own: first, the unmarked order of constituents and some superiority effects in Basque (cf. also Ortiz de Urbina 1989); second, the pattern of verbal agreement in Basque Gapping constructions; and third, some conditions on ACC clitization in Spanish, which are sensitive to the presence or absence of a DAT clitic (cf. Franco 1993, Franco & Landa 1995). We are ignoring all the evidence from English Double Object Constructions, for they have been used to argue in either direction.

Swiss German has ACC and DAT weak pronouns, so the combination of the two is predicted to abide by the constraint. The effects of the PCC are indeed manifested in the language, but only as a restriction against a particular linear order of such weak pronouns, not as an absolute prohibition against particular combinations. Thus, while the linear order is free when the ACC weak pronoun is 3rd person (as shown in (15)), only the ordering ACC-DAT is possible when the 3rd person pronoun is the DAT (as illustrated by the contrast in (16a-b)):[19]

(15) D'Maria   zeigt   en   mir   /   mir   en
      The Maria shows   him to-me / to-me him
      'Maria shows him to me'

(16) a. D'Maria zeigt mi em   b. *D'Maria zeigt em mich
          The Maria shows me to-him   The Maria shows to-him me
                                           'Maria shows me to him'

Under a morphological approach, the contrast in (15)-(16) leaves no options but adding 'linear order' to the cluster of conditions that govern the application of the PCC. This seems a very unlikely solution for several reasons. First of all, the universality of the constraint collides with the high degree of cross-linguistic variation with respect to the ordering of agreement markers: in Catalan, for instance, the ordering ACC-DAT (i.e. the sequence *me li 'me to him' in (2b)) yields ungrammaticality, unlike in Swiss German. Second, its explanatory power is hardly restricted to the contrasts in Modern Greek and Swiss German, and does not extend to the other asymmetries presented so far. Finally, a defining property of current generative theory is its disdain to the role of 'linear order' in the account for linguistic processes and its reinterpretation in terms of structural relations. This is certainly true of generative Syntax, where this notion has been substituted altogether for that of (asymmetric) c-command (Kayne 1994, Chomsky 1994), and to a certain extent this is also valid for generative Morphology. If we reinterpret the Swiss German data in terms of c-command (i.e. the first weak pronoun in the sequence c-commands the second weak pronoun) the advantages of such a development are apparent. Under this new interpretation, the contrast in (16) comes down to the fact that only in (16b) does the dative weak pronoun c-command the accusative one. Crucially, this characterization of the PCC parallels the one we have argued for in section 2.2.3 above. Accordingly, c-command, besides being a well motivated principle in the theory, will give us a consistent and uniform analysis for the variety of data presented throughout this section.

With this proposal, we do not intend to establish an absolute correlation between linear order and c-command relation among agreement markers. Such a

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(19) That this asymmetry has to do with the PCC is corroborated by the fact that, like in the Italian examples in (4), the presence of at least one strong pronoun cancels the restriction, allowing the otherwise ungrammatical ordering DAT-ACC. This is shown in (i) below, where the strong pronoun is *miich* 'me':

(i) D'Maria   zeigt   *em*   *miich*
     The Maria shows   to-him me
     'Maria shows me to him'

position is clearly untenable in the light of some of the data already presented in the article. Just to mention one case, in Catalan (see example (2b) in the text) the ACC clitic may linearly precede and still be c-commanded by the DAT clitic, as shown by its compliance with the PCC. Mismatches of this sort originate from the fact that the mapping between morphosyntactic structure —the relevant one for the PCC— and linearization is not direct but mediated by the late process of Vocabulary Insertion (cf. Halle & Marantz 1993a, b). In other words, linear orderings predicted by c-command relations may be overriden in the mapping between Morphology and Phonology, namely in the process of Vocabulary Insertion, in order to satisfy either language-particular morphological conditions on outputs —i.e., morphological templates— or morphophonological requirements of Vocabulary items themselves. In Catalan, for instance, the sequencing of clitics is rigidly determined by a templatic condition that always requires 1st and 2nd person clitics to precede 3rd person clitics, regardless of their syntactic function. See examples (2b), (7) and (8) in Catalan.

To summarize, two different generalizations regarding the PCC emerge from our discussion in this section: i. the constraint is only active at the X^o-level (that is, at the MC), requiring for its application the clustering of ACC (or ABS) and DAT person-case specifications within the same verbal unit; ii. morphosyntactic features forming the verbal complex are hierarchically organized in ways that parallel syntactic structures.

3. The univocity of person-case constraints: C-Command in Morphology

So far in this article we have noted the existence of person interactions between the following pairs of agreement markers: DATs and ACCs (ABSs), ERGs and ABSs, and ERGs and DATs (see note 6 for the last two). Assuming some kind of person hierarchy whereby 3rd persons are morphologically less 'specified' than 1st or 2nd persons (see section 3.4 for a revision of the notion of 'specification'), the three instances have in common that they all require that the first element of the pair be more specified for this feature than, or as equally specified for this feature as, the second element. Intriguingly, to the best of my knowledge no language ever reverses the direction of the requirement for these pairs: for instance, the constraint *ACC (ABS) → DAT 3rd* that mirrors the PCC is unattested across languages. This fact reveals a deeper property shared by all person-case constraints, which is their univocity or uni-directionality.

The present section argues for the relevance of c-command relations in Morphology. Thus, it will be claimed that the uni-directionality of the PCC (and similar constraints) stems from a c-command condition on the relation between trigger and target of the constraint(s). In addition, this section will develop our earlier claim that the organization of agreement markers at the MC hierarchical structures (and therefore their c-command relations) is defined in the Syntax. The analysis will be proven correct by its empirical adequacy throughout the section.

Before we proceed with the analysis, let me first outline some basic aspects of the syntactic theory adopted in this article.

3.1. The syntactic representation of (di)transitive and unaccusative predicates

In Chomsky's (1995) version of the Minimalist Program, (di)transitive and unaccusative predicates are represented as follows:[20]

(17) a. (Di)transitive predicates: b. Unaccusative predicates:

```
        vP                                         VP
       /  \                                       /  \
     DP₁   v'                                  (DP₂)  V'
          /  \                                       /  \
         v    VP                                    V    DP₃
             /  \
          (DP₂)  V'
                /  \
               V    DP₃
```
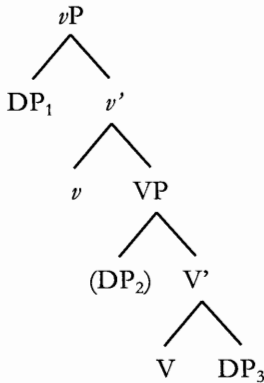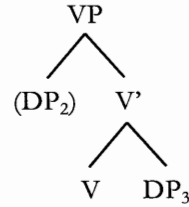
(Di)transitive and unaccusative predicates differ as to whether or not they project a light verb v: of these two, only (di)transitives do so. When projected (as in (17a)), this light verb v subcategorizes for a DP_1 (i.e. the external argument) in the specifier of its maximal projection and for a VP in the complement position; the lowest V, in its turn, is always projected (as in (17a,b)) and, like v, may subcategorize for two arguments: the indirect object (DP_2) in Spec-VP, and the (underlying) direct object (DP_3) as a complement.

Under the Minimalist Program, arguments need to check their Φ-features with the verb for the derivation to converge. Checking can only take place if arguments enter into a Spec-Head relation with the verb. In the initial version of the program (cf. Chomsky 1993) Φ-features were checked through Agreement Projections, but under the new formulation Chomsky gets rid of them, checking now taking place in any Spec-Head configuration without the mediative role of Agr. In this article we will stick to Chomsky's latter position, for our discussion in sections in 3.2 and 3.4 will provide empirical support to the elimination of Agreement Projections from syntactic representations.

Some arguments —namely DP_1 and DP_2 in (16a), and DP_2 in (17b)— meet the Spec-Head relation with the verb already in their underlying position, so any further movement for Case considerations should at first be barred by economy. At this point we will follow Chomsky in assuming that there is some sort of complementarity between θ-assignment and checking of Φ-features. By this assumption,

(20) We take the idea that unergatives are transitive verbs for granted.

arguments cannot receive its θ-role and check its Φ-features in the same position, forcing arguments to move in order to satisfy the checking requirement.[21,22]

The Case Theory adopted in this article takes, with little modifications, after that in Laka (1993b). Under this proposal, Nominative and Ergative Case systems have two Case-assigners (or Case-checkers, in the spirit of the Minimalist Program): first, Tense (T) assigns NOM and ERG Cases; second, the verb (which we take to be either *v* or V depending on the type of predicate: *v* for (di)transitives, V for unaccusatives) assigns ACC and ABS Cases (but see Murasugi this volume). With the elimination of AgrPs it is reasonable to assume that the DAT case is assigned by the verb (*v* or V) as well. The representation of (di)transitive clauses, where the two assigners are activated, is the same in both Case systems. This is illustrated in (18) next:

(18)   (Di)transitive clauses in NOM and ERG Case systems:[23]
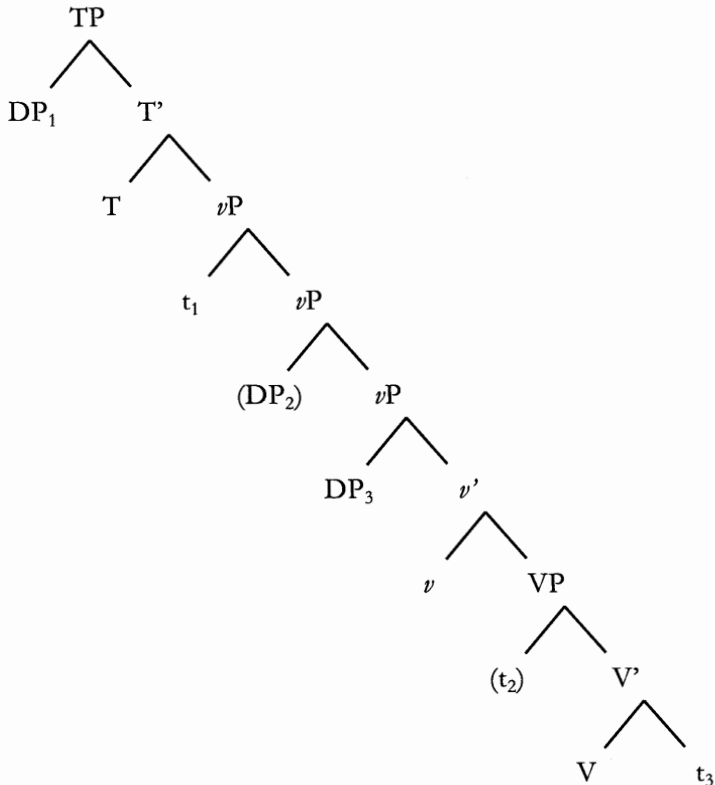
```
              TP
             /  \
          DP₁     T'
                 /  \
                T    vP
                    /  \
                  t₁    vP
                       /  \
                  (DP₂)    vP
                          /  \
                      DP₃     v'
                             /  \
                            v    VP
                                /  \
                            (t₂)    V'
                                   /  \
                                  V    t₃
```

In (18), the external argument DP_1, that is base-generated in the specifier of vP, moves to Spec-TP where it receives NOM or ERG case; on their part, DP_2 and DP_3 raise from VP to Spec-vP to receive their Case-features.[24]

The conflict between Nominative and Ergative Case systems —i.e. the so-called Obligatory Case-Parameter— arises with unaccusative predicates, which, ignoring DAT, only require one Case-assigner. As Laka correctly notes, in this system the asymmetry comes down to the choice of Case-assigner: Nominative systems activate T, whereas Ergative systems activate V. Accordingly, the S-argument (DP_3) will behave in a different way in the two systems, raising to Spec-TP and to Spec-VP respectively. DAT case is consistently assigned in Spec-VP. Compare the two representations in (19):
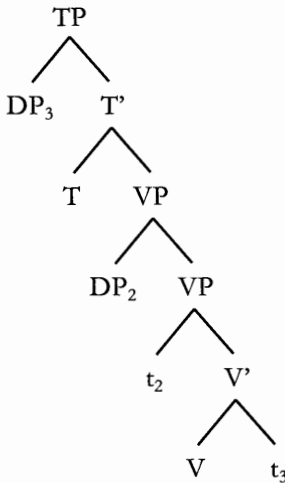
(19)   a.   NOM system: b.   ERG system:
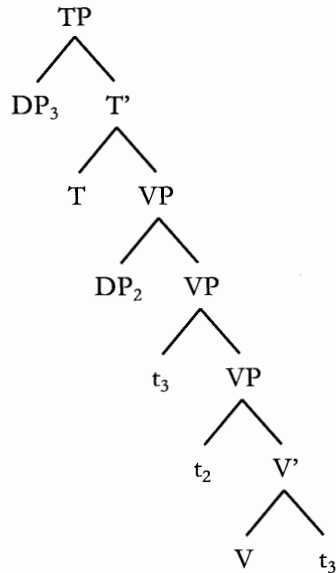
As represented in (19b), in Ergative languages the S-argument does not stop at Spec-VP but undergoes an additional movement to Spec-TP in order to satisfy the Extended Projection Principle (EPP). This latter step is independently justified by the parallel behavior of A-arguments and S-arguments with respect to Control in ERG languages such as Inuit and Basque. Since the ability to be controlled is linked to the position of Spec-TP, then the representation in (19b) follows.[25] This is illustrated with examples from Basque:

(24) Multiple specifiers are allowed under this system.

(25) Zabala (1995) notices that not all intransitive verbs in Basque allow their subjects to be controlled by an argument external to the clause. This is shown in (i) with the verb *erori* 'to fall':

(i)   *Haurrari₁ ahaztu zaio   [e₁ Mireni   erortzea]
      child-D   forget 3A-Aux-3D [e₁ Miren-D fall-NOM]
      *'The child forgot to fall from Miren's arms'

(20) a. Nik$_i$ ez dakit   [pro$_{i,*j}$ zure etxera   joaten]
          I-E no 3sgA-know-1sgE [your house-to go-Nominalizer]
          'I do not know how to go to your house'
      b. Nik$_i$ ez dakit   [pro$_{i,*j}$ arraina prestatzen]
                              [fish-A prepare-Nominalizer]
          'I do not know how to cook fish'

3.2. The morphological representation of inflected (di)transitive and unaccusative verbs

Suppose now, as it was initially suggested in section 2.2, that morphosyntactic features are hierarchically organized at the MC and that the internal structure of inflectional verbs parallels the overall structure in the overt Syntax. Given the syntactic theory adopted so far, the morphosyntactic representation of inflectional verbs will look like (21):

(21) a. (Di)transitive verbs: b. Unaccusative verbs:
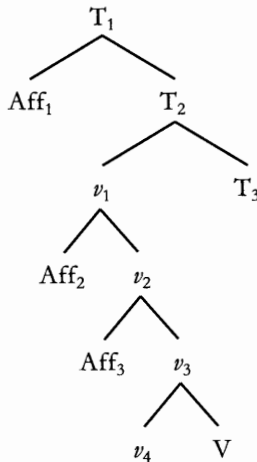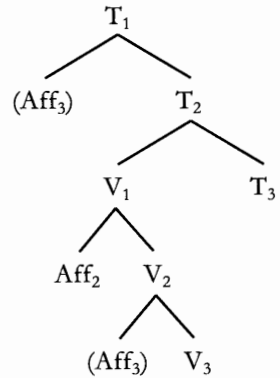
In parallel to the syntactic representation in (18), the morphological structure for (di)transitive verbs in (21a) holds the same for Nominative and Ergative systems:

On the basis of instances like (i), this author concludes that subject raising to Spec-TP is a property of just the subclass of intransitive verbs that abide by control. This is not a necessary conclusion, however. Absence of control is also found with certain transitive stative verbs such as *pisatu* 'to weigh', where no doubt the subject is in Spec-TP. This is illustrated in (ii):

(ii) *Umeari$_i$ ahaztu zaio   [e$_i$ hogei kilo pisatzea]
      child-D   forget 3A-Aux-3D [e$_i$ twenty kilo weigh-Nominalizer]
      *'The child forgot to weigh twenty kilos'

Based on (ii), we will postulate that the correspondence between control and raising to Spec-TP is not as strict as assumed by Zabala. This is so because, whereas every instance of control requires raising of the subject to Spec-TP, not every subject in Spec-TP is a potential target for control. In other words, we will argue here that the ungrammaticality of (i) has nothing to do with the surface syntactic position of its S-argument, but with whatever the source of the ungrammaticality of (ii) is. Hence, we will treat all S-arguments as uniformly raising to Spec-TP.

ERG/NOM will fill in for Aff_1, DAT for Aff_2, and ACC/ABS for Aff_3. On the other hand, the final morphological representation for unaccusative verbs in (21b) will vary with the type of Case system, this being derived either from the syntactic structure in (19a) or from that in (19b). Thus, in Nominative systems NOM will always take the place of the higher Aff_3, while in Ergative systems ABS will fill in for either Aff_3.

Notice that the double option for unaccusative verbs in the Ergative systems is theoretically possible only if agreement features are analyzed as being carried along by arguments in the Syntax, instead of as being heads of their own AgrP maximal projections like in Chomsky's (1993) previous system. Under the "old" model Agr heads occupied a fixed hierarchical order that could not be altered in the Syntax because it would induce a violation of the Head Movement Constraint (Travis 1984). Our approach, on the other hand, circumvents the problem as arguments may skip one another quite freely. Therefore, if correct, our proposal in the article will provide independent morphological evidence in favor of the elimination of AgrPs from the syntactic analysis. See also section 3.4.

By the same token, the system we are aiming at is also hardly compatible with the syntactic operation of 'checking'. To be meaningful, the notion of 'checking' conveys a conception of Morphology under which morphosyntactic features are rigidly organized (either structured or not) within the verbal complex. However, the data presented in this article call for a more dynamic view of the internal organization of verbal units. For that reason, in this article we will postulate that verbs are deprieved of all Φ-features except Case in the Lexicon and that the incorporation of the latter to the verbal unit is obtained by means of a 'copy' operation from arguments and/or adjuncts. Such a 'copy' operation will take place in the mapping between Syntax and Morphology.

Very roughly, we conceive 'copy' as a morphosyntactic operation with two different aspects: first, for any syntactic argument and/or adjunct α (=XP), 'copy' creates a partly identical morphosyntactic element $β°$ of the $X°$-level;[26] second, this same operation adjoins the created element $β°$ to the head $H°$ with which the argument and/or adjunct (=XP) is 'paired' in the overt syntax. 'Copy' typically takes place from Case-positions, although other options are also possible (cf. sections 2.4 and 3.3).[27,28]

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(26) The morphosyntactic specifications of α are not copied onto β in an unrestricted way, but only those specifications and structure that are relevant are kept. To restrict the set of features transferred in the process of agreement, we could make use of Barbier's notion of PROJECTION SYSTEM (cf. Bahloul & Harbert 1992). This author's system was initially developed as a refinement of Chomsky's checking theory with the aim of making the structural conditions required for checking more precise. The reason underlying such a revision is that Barbier worried, like we do now, that, given a Spec-Head configuration between a maximal projection XP and a head H, there is an asymmetric pattern between the specifier of XP and the complement of XP regarding their agreement (either as checking or as copy) with the head H. For instance, whereas an inflected verb may check or be copied the feature Num, which is the head of the complement of DP, the same is not possible with the head of the specifier of DP.

Very briefly, Barbier develops a formal system which defines, within any maximal projection XP, a syntactic domain D which includes only the head X of XP and the heads of the successive complements (i.e., the head Y of the complement of X, the head Z of the complement of Y, and so on). As a result, the system will exclude all specifiers from the syntactic domain D.

(27) In languages such as English where Case is checked at LF, the resulting morphological structures will logically differ in the details, as the incorporation of the morphosyntactic features of arguments to the verb will take place from a different position, namely from the position in which they were generated in the base.

(28) To the best of my knowledge, scrambling never licenses the application of 'copy' from those positions. It remains for the future the study of the conditions that govern the application of this copy operation.

3.3. C-command relations at the Morphological Component

With all this in mind, let us return now to the characterization of the PCC and of the other restrictions. As we anticipated at the beginning of the section, c-command plays a crucial role in the account of the univocity of these constraints.

This article adopts a recent definition of *c-command* by Epstein (1995), who reformulates Reinhart's (1979) representational definition of the concept in minimalist terms. This author's proposal takes advantage of the derivational notion of *Pair* (that is, Merge or Move), an operation that takes two syntactic objects α and β and creates a new object $K=\{\gamma,\{\alpha,\beta\}\}$ or $K=\{<\underline{\alpha,\alpha}>,\{\alpha,\beta\}\}$ —depending on whether K is formed by 'substitution' or adjunction, respectively. The two syntactic objects α and β paired to form a new object L are said to be *terms* of L, L itself also being a *term*. This notion of *term* (Chomsky 1994: 12) roughly corresponds to that of *constituent*, *category* or *syntactic tree*. The relation *to be a term of* is a transitive one, so if α and β are terms of L, and L is a term of K, then α and β are terms of K.

Epstein's (1995: 17) derivational definition of *C-Command* is stated as follows:

(22) Derivational C-Command:
      X c-commands all and only the terms of the category Y with which X was Paired by Merge or by Move in the course of the derivation.

To illustrate this definition, consider the representation in (21a) above. The same exposition should hold with minimal modifications for the representation in (21b). The whole tree in (21a) corresponds to our term *5* in (23j) below. The structure is formed by succesive *Pairing* of the terms listed in (23a-i): pairing of V and v_4 in (23a) yields the new term $\{<\underline{v_3,\ v_4}>,\{v_4, V\}\}$ in (23b); subsequent pairing of (23b) with the term Aff_3 in (23c) forms the object $\{<\underline{v_2,v_3}>,\{1,Aff_3\}\}$ in (23d), and so on: (For simplification, some terms are substituted by numbers.)

(23) a. v_4, V   f. $3=\{<\underline{v_1,v_2}>,\{2, Aff_2\}\}$
      b. $1=\{<\underline{v_3,\ v_4}>,\{v_4,V\}\}$ g. T_3
      c. Aff_3 h. $4=\{<\underline{T_2,T_3}>,\{3, T_3\}\}$
      d. $2=\{<\underline{v_2,v_3}>,\{1,Aff_3\}\}$ i. Aff_1
      e. Aff_2 j. $5=\{<\underline{T_1,T_2}>, \{4, Aff_1\}\}$

Based on (23), and according to the definition of c-command adopted here, the agreement affixes in (21a) establish the following c-command relations: Aff_1 c-commands the terms member of *4* (i.e. *3* and T_3) and the members of its members (i.e. the terms *2*, Aff_2, *1*, Aff_3, v_4 and V); Aff_2 c-commands the terms *2* and Aff_3, and the members of its members (i.e. *1*, v_4 and V), but not for instance Aff_1 or *T*; and finally, Aff_3 only c-commands the members of *1* (i.e., V, and v_4).

3.4. A preliminary account for the data: the Generalized Person-Case Constraint (GPCC)

Recall now the series of constraints listed earlier (section 3.1): DAT-ACC (ABS), ERG-ABS, and ERG-DAT. It was noted then that, with these Case combinations,

person restrictions only apply in one direction across languages, always requiring the second element of these pairs to be less specified for person than, or as equally specified for person as, the first element. In the light of (23), where ERG/NOM correspond to Aff_1, DAT to Aff_2, and ACC/ABS to Aff_3, it becomes apparent that the direction of these three constraints matches the direction of their c-command relations: DATs c-command ACCs (ABSs), ERGs c-command ABSs, and ERGs c-command DATs. Hence, the notion of 'c-command' must be incorporated to the definition of the three constraints. We would like to propose the following formulation of what we call the 'Generalized Person-Case Constraint':

(24)   Generalized Person-Case Constraint (GPCC):
       A Person-morphosyntactic feature P_1 must be less referential than, or as equally referential as, a Person-morphosyntactic feature P_2 that c-commands it at MC.

The GPCC derives the two constraints involving ERGs in Southern Tiwa (cf. note 6) in a natural way. Likewise, it also provides a straightforward account for the PCC-effects found with canonical objects (examples (2b), (3b)) and with true reflexive objects (example (8)), as well as for the total absence of PCC-effects with EDs in Basque (example (11b)). So far, only the pattern of unaccusative verbs in Standard Basque (example (13)), Basque allocutives (example (9b)), and Catalan ethical-datives and inherent clitics (examples (7a) and (7b), respectively) seem to escape to the predictive power of our condition. All such alleged "exceptional" cases will be discussed in detail in the following pages, but before that, let me introduce some clarificatory remarks on the constraint stated in (24).

Our formulation of the GPCC is partly inspired by Murasugi's (1994: 132) Feature Specification Constraint (FSC), which in its turn is defined as follows:

(25)   Feature Specification Constraint
       The features of a lower Agr must be less specified than, or as equally specified as, the features of a higher Agreement.

Despite certain similarities, our proposal differs from Murasugi's in several respects which are crucial for the correct analysis of the phenomenon at hand. First of all, our condition eliminates Agr from its formulation. This is not just an aesthetic move, but has both conceptual and empirical implications. Conceptually, in Murasugi's system agreement features are encoded within syntactic heads, namely $Agr°$, and therefore their hierarchical organization cannot be altered in the Syntax; under our proposal, on the contrary, agreement features are embodied within arguments and/or adjuncts and are later incorporated (copied) to the verb, therefore allowing for a larger degree of mobility of morphosyntactic features (see section 3.4.1). This conceptual difference has a reflect in the empirical coverage of both analyses. Indeed, since the hierarchical order of Agreement Projections is taken to be fixed across languages, Murasugi's analysis cannot account for the asymmetry between Standard Basque (see example (13)), on the one hand, and Western Biscayan Basque and Southern Tiwa (see note 15), on the other hand, regarding the effects of the PCC with unaccusative verbs.

Second, the elimination of Agr from our characterization of the GPCC conveys the substitution of the relation of 'dominance' implicit in Murasugi's definition by that of 'c-command'.

Finally, our system also provides, with the substitution of Murasugi's concept of 'specificity' for that of 'referentiality,' a deeper insight on the nature of person distinctions and, ultimately, on the motivations for the existence of a constraint such as the (G)PCC. Under Murasugi's system, the notion of 'degree of featural specification' is used simply as a notational device to express the Pronoun Hierarchy. Unfortunately, the use of such a notion masks the true dimension of the role played by structural conditions in the application of the constraint: why should the degree of featural specification be sensitive to dominance or c-command relations among agreement markers? In our proposal in (24), on the other hand, the crucial property underlying the Pronoun Hierarchy and the (G)PCC is that of 'referential uniqueness.' Very roughly, the notion of 'referential uniqueness' refers to the ability of a nominal element to unambiguously identify entities in the discourse. According to this definition, 3rd person pronouns are less referential than 1st and 2nd person pronouns. The contrast among pronouns is illustrated with examples in (26):

(26) a. Clinton$_i$ said [that he$_{i,k}$ would be the next president]
      b. Clinton$_i$ said [that (you/I)$_{*i, j, *k}$ would be the next president] (You/I = j)

With 1st and 2nd person pronouns, as in (26b), the interpretation of pronouns is unambiguously fixed in the discourse as referring to speaker and hearer, respectively. In (26a), on the contrary, the interpretation of 3rd person pronouns ranges over the remaining individuals in the discourse, so it will be disambiguated by the context. As it stands, the notion of 'referential uniqueness' is closely related to and entails that of 'presuppositionality.' If correct, our account of the (G)PCC clearly reminds of the Binding Theory in two different aspects: first, the relevance of the notion of 'referentiality' and, second, its sensitivity to structural conditions.[29,30]

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(29) In Albizu (in progress), it is argued that morphological and syntactic asymmetries displayed by 1st and 2nd person nominals on the one hand, and 3rd person nominals on the other stem from a basic structural difference among them. Thus, it is claimed that 1st and 2nd person nominals are structurally deficient in comparison to 3rd person nominals, for they do not project a maximal category Deictic Phrase (*d*) that is characteristic of the latter. Compare the structures in (ia-b), where Φ corresponds to the projection of the nominal features [person] and [number]: (We follow the notational conventions proposed in Chomsky 1994).

(i)   a.   <u>1st and 2nd person:</u>   b.   <u>3rd person:</u>

                                                            d
                                                          ⟋ ⟍
              φ   d   φ

The functional head Deictic *d* is a quantifier-like element that ranges over the set denoted by Φ in (ib). The quantificational character of 3rd person nominals, as opposed to 1st and 2nd person ones, stems from the lower degree of referentiality of the [person] specification their Φ is endowed with.

In this work, it is also argued that their distinct pattern regarding the PCC and other constraints of the same sort is due to the interaction of the structural asymmetry in (i) with the Binding Theory. Details on this analysis are omitted for space limitations.

(30) There are additional dissimilarities between both approaches that have to do with the Case theories adopted by the two. See Murasugi (this volume).

Having made these clarifications, we turn now to fight all the apparent counter-examples cited above one by one.

3.4.1. Unaccusative verbs. Consider the alternating pattern regarding the PCC displayed by S-arguments in Ergative languages. The relevant contrast is repeated in (27)-(28) for convenience. Example (27), (=(13) in section 2.2.3), illustrates the case of Standard Basque, where the effects of the constraint are canceled with unaccusative verbs; example (28), (=(ii) in note 15), on the other hand, exemplifies the opposite pattern in Western Biscayan Basque, where the DAT marker is mandatorily dropped from the verb as a result of the PCC:

(27)   Ni Peruri   hurbildu   *n*-atzai-*o*
       I-A Peru-D approach 1sgA-Aux-3sgD(Pres)
       'I approached to Peru'

(28)   a. *Juntau   *n*-intza-*ke*-n   b. Juntau *n*-intze-n   beraiengana
          Approach 1sgA-Aux-3plD-Pas   1sgA-Aux-Pas them-to
          'I approached to them'

Suppose that the Φ-features of the S-argument incorporate (copy) to the verb from Spec-VP in all varieties of Basque as well as in Southern Tiwa. According to our formulation of the constraint in (24), the resulting morphological configuration will be filtered in by the GPCC in all cases except when the ABS affix is 1st or 2nd person, for the DAT affix c-commands the ABS affix at the MC. For such exceptional instances, Ergative languages will have to develop alternative strategies that will cover the gap. The above asymmetry between (27) and (28) comes down to the different repair-strategies available in the respective varieties of Basque: whereas speakers of Standard Basque may resort to a morphosyntactic mechanism to circumvent the GPCC, such an option is unavailable to speakers of Western Biscayan Basque.

Very crucially, the availability of a morphosyntactic repair-strategy in Ergative languages is predicted under our system. This is so because, given the Case Theory adopted in the article, the syntax of unaccusative predicates in those languages enables the formation of two alternative morphological structures, as opposed to that in Nominative languages:[31] besides from VP, copy of the Φ-features of the S-argument may also take place from Spec-TP, though only as a last resort. Such a solution is the one adopted by Standard Basque in (27), under which 1st and 2nd person ABS affixes now c-command DAT affixes at the MC in compliance with the GPCC. On the other hand, even if theoretically possible, this same alternative option is parametrically excluded by Western Biscayan Basque (and Southern Tiwa), so affix combinations like (28a) ultimately will show the effects of our condition,

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(31) Our analysis also makes the right predictions for Nominative languages. Thus the proposal predicts that NOM S-agreement will never abide by the PCC, for it always c-commands DAT agreement. This is indeed the case in Spanish (and presumably in all Romance languages), as shown by (i):

(i) *Le* pareci-*ste*   simpático a   María
     3sgD look-2sgNom nice   to María
     'You looked nice to María'

therefore yielding the ungrammaticality of the sentence. As it stands, the only repair-strategy available for Western Biscayan Basque (and for Southern Tiwa) is the one illustrated in (28b), namely the elimination of at least one of the conflicting agreement specifications.

3.4.2. Allocutives and Ethical-Datives. The analysis of non-argumental clitics (that is allocutives, ethical-datives and inherent clitics) is slightly more complex though. The pattern of inherent clitics does not follow from our preliminary definition of the GPCC, so their discussion will be postponed until section 4. Let us concentrate now on allocutives and ethical-datives. It was shown in section 2.2.1 that neither Basque allocutives (example (i) in note 14) nor Catalan ethical-datives (7a) obey the PCC. These examples are repeated in (29)-(30) respectively:

(29)   Pellok Mireni gezurra esan z-i-*o-k*-Ø
        Pello-E Miren-D lie-A tell 3sgA-Aux-3sgD-2D$_{ALLO}$/masc-3sgE
        'Pello has told Miren a lie (male addressee)'

(30)   *Me li* van dir que havia suspès l'examen
        1-eth. 3-D said-3Nom that had-3Nom failed the exam
        'They told him (on me) that he had failed the exam'

Similarly, the behavior of allocutives and ethical-datives with respect to the PCC follows from their particular syntax. Given the discursive character of these agreement markers, it is reasonable to assume that the two occcupy a very high position in the syntactic structure (and, accordingly, in the morphological structure as well), probably in the specifier position of or adjoined to some functional projection XP dominating TP. In effect, there is syntactic evidence that corroborates the correctness of such an assumption.

In his study on allocutivity in Basque, Oyharçabal (1993) observes that ALLO markers are excluded in the language from clauses whose complementizer position is filled in the Syntax,[32] such as for instance embedded declarative clauses, relative clauses, direct and indirect interrogative clauses, etc. Consider the following pair of examples (from Oyharçabal 1993: 24):

(31)   a. Ez   dinat   nahi [gerta   d-aki-o-*n*]
           Neg 3sgA-Aux-1sgE-Allo(fem) want happen 3sgA-Aux-3sgD-Comp
        b. *Ez dinat nahi [gerta   d-aki-o-*na-n*]
                                    happen 3sgA-Aux-3sgD-Allo(fem)-Comp
           'I do not want it to happen to him'

The two sentences in (31) contrast with respect to the realization of the ALLO affix *-na-* on the inflected verb of the embedded subjunctive clause: in the former sentence, the ALLO affix is attached to the embedded verb; in the latter, it is not. In (31), only the example in (b) results in ungrammaticality. Notice that the presence

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(32) This author notices that the restriction on allocutivity is very systematic in Souletin Basque; as for the other dialects, he notes that the conditions have been relaxed to some extent, although the generalization in the text still holds true for all dialects of Basque.

of an ALLO marker on the main verb does not render the sentence (31a) ungrammatical.

After providing conclusive evidence against a morphological treatment of the restriction —which we are not reviewing here—, Oyharçabal (1993) attributes such constraints on allocutivity to the fact that they are operators generated inside TP that have to move to C in the Syntax. Thus, according to this author, the occurrence of these agreement markers will be restricted to those constructions where C is empty and available to the allocutive operator. In Albizu (1992) a different approach to the phenomenon is taken whereby the restriction comes down to the fact that allocutives project a functional projection FP that intervenes between the complementizer and a maximal projection Mood Phrase selected by C,[33] thus blocking the selectional relation between the two. Be that as it may, the relevant conclusion shared by the two analyses is that allocutives in Basque are hierarchically higher than TP.

Additional evidence for a high syntactic position of 'discursive' agreement markers may come from the interaction of ethical-datives with the phenomenon of Control in Spanish. In this language, grammatical sentences containing an ethical-dative become ungrammatical when embedded in the complement position of an object-control verb, as illustrated by (32) and (33):[34]

(32)   *Mi marido*   me   *fuma*   *en el   balcón*
       My husband 1-eth. smoke   in   the balcony
       'My husband smokes (on me) in the balcony'

(33)   a.   ??/*Le$_i$ hace/hago [PRO$_i$ fumar-*me*   en el   balcón]
            3sgD make   smoke 1-eth. in the balcony
            'He/I makes/make him smoke (on me) in the balcony'
       b.   ??/*Le$_i$ permite/permito [PRO$_i$ fumar-*me*   en el balcón]
            3sgD make   smoke 1-eth. in the balcony
            'He/I allows/allow him to smoke (on me) in the balcony'

The ungrammaticality of the two examples in (33a,b) is clearly linked to the presence of the ethical-dative: first, the omission of the clitic turns the above sentences grammatical, and secondly argumental clitics are never ruled out in these same contexts. That the contrast between (32) and (33) has to do with Control is shown by the grammaticality of (34):

(33) In that paper the so-called Mood Phrase is argued to corrrespond to the value Realis/Irrealis. In Basque this maximal projection would be headed by the subordinator particles -*ela*/ -*en* respectively, generally treated as complementizers in the generative literature on Basque.

(34) Unlike with object-control verbs, ethical-datives are fine in the infinitival complement clause of a subject-control verb such as *prometer* 'to promise':

(1)   Juan$_i$ prometió [PRO$_i$ fumar*(me)*   en el   balcón]
      Juan promise   smoke 1.inh in the balcony
      'Juan promised to smoke (on me) in the balcony'

At this point we have no explanation for this asymmetry.

(34)   Le   permite/permito [que   pro *me*   fume   en la cocina]
       3sgD make   that   1-eth. smoke in the kitchen
       'He/I allows/allow him to smoke (on me) in the kitchen'

In this article we will tentatively suggest that the Spanish data can be taken into account if ethical-datives are projected higher than the embedded subject PRO.[35] In that case, ethical-datives will come between the controller object and PRO, either blocking the raising of the null pronominal to the position of the object or triggering some violation of principle A of the Binding Theory —depending on the theory of Control adopted.[36]

Under these premises, namely that ALLO affixes in Basque and ethical-datives in Romance languages are projected at least as high as TP, the absence of PCC-effects in (29)-(30) above follows very naturally from their failure to be c-commanded by argumental DATs.

Yet, by the same token, the GPCC would predict for allocutives and ethical-datives the imposition of restrictions on the person of NOM/ERG or DAT agreement markers, as the former c-command the latter. The same issue arises with unaccusative verbs in Standard Basque (section 3.4.1), where ABS affixes should trigger restrictions on DAT affixes. Indeed, as it stands, the GPCC gives way to many constraints that are however non-existent across languages.

Summing up, two different results have been achieved in this section by virtue of introducing the notion of c-command: on the one hand, we have provided a principled account for the property of the univocity of the PCC and other similar constraints; on the other, we have introduced a first formal criterion to define the set of possible constraints on combinations of person-case agreement markers in natural languages. Based on this notion, we have formulated our Generalized Person-Case Constraint, which has allowed us to explain most of the data presented in section 2.2. Nevertheless, as it stands, the GPCC constitutes an overpowering condition that filters out many combinations attested in natural languages. The solution to this problem is presented next in the context of our discussion on the unmarkedness of the PCC.

4. The unmarkedness of the PCC: On the relevance of Locality conditions

No other constraint against particular combinations of agreement markers comes close to the PCC as to its generality across languages. In fact, there are many constraints which never take place, even if theoretically possible. Unless we acknowledge it as a chance coincidence, it is reasonable to suspect that there must be some property that, being unique to the relation between ACC (ABS) and DAT —or

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(35) It remains to be determined if that position of ethical-clitics is created by Merge or by Move —in other words, if they are generated in that position in the base in that position or raised in the Syntax. I leave this question open.

(36) We are not commiting ourselves to any particular theory of Control. The significance of this choice for our analysis will have to be considered in more detail in further studies.

between direct and indirect object for that matter—, is ultimately responsible for its degree of unmarkedness. This section will claim that the unmarkedness of the PCC derives from the locality of the relation between ACC (ABS) and DAT agreement markers. Locality will be defined in terms of 'inclusion in the same *Minimal Domain*' (Chomsky 1993 [1995], 1995).[37] The addition of such a locality condition to our definition of the GPCC will allow us to formulate the more restrictive constraint of the PCC, which will account for all the data (unwanted restrictions, inherent clitics) left unexplained in section 3.

4.1. Domains in Syntax

Chomsky (1993 [1995], 1995) introduces the X-bar-theoretic notion of *domain* and all its subsequent divisions (i.e. *complement domain, residue* and so on) with the aim of providing a formal characterization of the different X-bar relations (adjunction, specifier-head, head-complement) that may take place in an X-bar-structure like (35):

(35)

$$
\begin{array}{c}
XP_1 \\
UP \quad XP_2 \\
ZP_1 \quad X' \\
WP \quad ZP_2 \quad X_1 \quad YP \\
H \quad X_2
\end{array}
$$
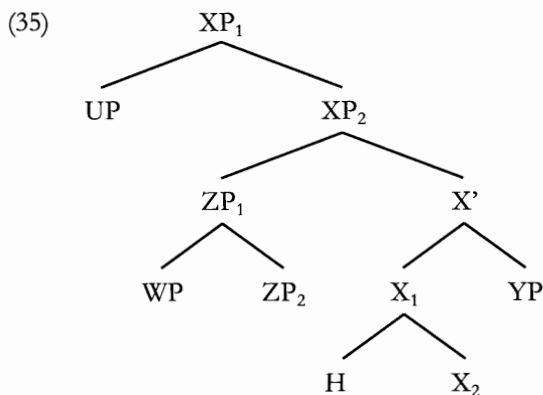
Since the relevant relations in Syntax never occur in larger structures than (35), the first task is to formally delimitate the boundaries of (35): the top edge is defined by the notion of *Max*; the bottom boundary is established by the notion of *minimal domain*, which restricts the broader definition of *domain*. Chomsky's (1993, 1995) definitions are presented in (37), for which he assumes the standard notion of *domination* in (36). We spare the reader the definitions of *complement domain, residue, checking domain* and *internal domain*, because, as we will argue in the next section, they play no role whatsoever at the X°-level:

(36)   For the pair (σ,β), σ a segment,
    a. The category α *dominates* β if every segment of α dominates β.
    b. The category α *contains* β if some segment of α dominates β.

(Chomsky 1993: 11 [1995: 177])

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(37) We thank Jairo Nunes for bringing this possibility to our attention.

(37) Where α is a feature or an X^o category, and CH is the chain (α, t) or (the trivial chain) α,
      a. Max(α) is the smallest maximal projection including α.
      b. The *domain* δ(CH) of CH is the set of categories included in Max(α) that are distinct from and do not contain α or t.
      c. The *minimal domain* Min(δ(CH))) of CH is the smallest subset K of (CH) such that for any $\gamma \in \delta$(CH), some $\beta \in$ K reflexively dominates γ.

(The definitions of Max(α), $\delta(\alpha)$) and Min($\delta(\alpha)$) have been taken from Chomsky 1995: 299, and those of Compl($\delta(\alpha)$) and Res(α) from Chomsky 1993: 11 [Chomsky 1995: 177]).

Applying the definitions in (36) to the structure in (35), the following relations obtain: the two-segment category XP dominates ZP, WP, X', and whatever they dominate; XP contains UP and whatever UP and XP dominate; ZP contains WP but does not dominate it; and finally, the two-segment category X contains H but does not dominate it.

Taking now the definitions in (37) into consideration, the structure in (35) is decomposed as follows: to begin with, Max is equal to [XP$_1$, XP$_2$] for either heads X or H; as for domains, the domain of X is {UP, ZP, WP, YP, H} and whatever these categories dominate, whereas the domain of H is the same minus H; finally, the minimal domain of X is {UP, ZP, WP, YP, H}, whereas the minimal domain of H is {UP, ZP, WP, YP}.

4.2. Minimal Domains in Morphology

The previous definitions in (37) are not immediately applicable in the Morphology but require a few adjustments in order to make them suitable for this component. This is so because of a basic property of the Morphology, namely the fact that only X^o-categories are legitimate objects in the MC (Chomsky 1994: 18, 1995: 319). The property trivially forces the elimination of the notion of *maximal projection* from the formulation in (37a). To replace it, we make use of the notion of *term* (cf. section 2.3), a concept that is neutral with respect to categorial levels.

In addition, the restraint of the Morphology to X^o-categories renders the notions of *residue* and *complement domain* (and therefore also those of *checking domain* and *internal domain*) useless at this level. Since only adjunction operations (as opposed to substitution operations) are involved in the formation of inflected words, head-complement and spec-head relations established in the Syntax will neutralize in the mapping to morphological structures. Therefore, *residue* and *complement domains* become undistinguishable from and equivalent to *domain*, the same as *checking* and *internal domains* with respect to *minimal domain*.

With these considerations in mind, the definitions in (36)-(37) will stand now as presented in (38)-(39). For the sake of consistency, the above definitions are all reformulated in reference to the notion of *term*:

(38) a. The category α dominates β if β is a term member of every segment of α.
      b. The category α *contains* β if β is a term member of α.

(39)   Where α is an X° category, and CH is the chain (α, t) or (the trivial chain) α,

    a.   Max(α) is the smallest full-category term dominating α.

    b.   The *domain* δ(CH) of CH is the set of terms member of Max(α) that are distinct from and do not contain α.

    c.   The *minimal domain* Min(δ(CH))) of CH is the smallest subset K of δ(CH) such that for any $\gamma \in \delta$(CH), some $\beta \in K$ reflexively contains γ.

Given the two morphological structures in (40), which correspond to those of (di)transitive and unaccusative verbs,

(40)   a.   (Di)transitive verbs: b.   Unaccusative verbs:
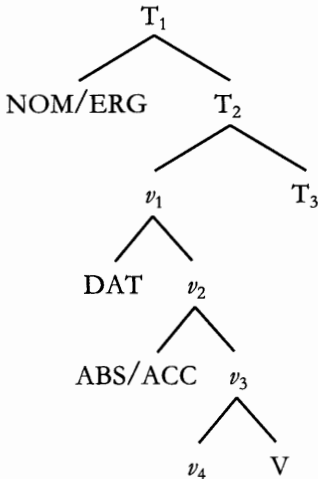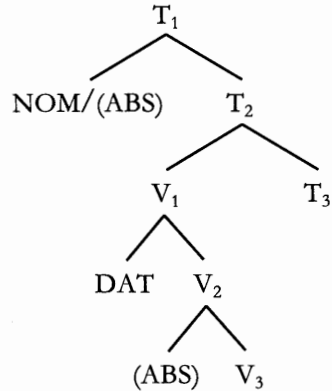
the definitions in (39) provide the following results. Let us start with the representation in (40a). From (39a), it follows that Max(T)=$[T_1, T_2]$, Max(v)=$[v_1,v_2]$, and Max(V)=$[v_1,v_2]$; by applying (39b) we obtain that the domain of T is {*ERG/NOM, v_1*} and all their members, the domain of v is {*DAT, ABS/ACC,* V} and all their members, and the domain of V is the same as v, minus V; finally, (39c) determines that the minimal domain of T is {*ERG/NOM, v_1*}, the minimal domain of v is {*DAT, ABS/ACC,* V}, and the minimal domain of V is again the same as v, minus V.

Take now the structure in (40b). The results are basically the same as for (di)transitive verbs except for those changes derived from the absence of the light verb v. Hence, Max(T) remains equal to $[T_1, T_2]$, the same as Max(V) remains $[V_1,V_2]$; the domains of T and V are slightly modified, for the domain of T becomes {*(ABS)/NOM,* V_1} and all their members, while the domain of V is now {*DAT, (ABS)/ACC*} and all their members; minimal domains in (40b) also change accordingly, the minimal domain of T being {*(ABS)/NOM,* V}, and that of V becoming {*DAT, (ABS)/ACC*}.

4.3. Minimal Domain and PCC

We are ready now to answer the question raised at the beginning of section 4 regarding the idiosyncrasy of the relation between DATs and ACC/ABSs. The combination of these two person-case agreement markers is characterized, in opposition to others, by the locality of their relation: DATs and ACC/ABSs are the only agreement markers to co-occur within the same minimal domain in the Morphology.

The incorporation of *locality* to the formulation of the GPCC in (24) will derive the more particular definition of the PCC below, where *locally* stands for 'in the same minimal domain':

(41)   Person-Case Constraint (PCC):
        A Person-morphosyntactic feature P_1 must be less referential than, or as equally referential as, a Person-morphosyntactic feature P_2 that locally c-commands it at the MC.

The definition in (41) overcomes the problems faced by the GPCC (that is, its excessive predictive power and the unexplained case of inherent clitics (cf. section 3.4)) since it accounts for all and only the effects of the PCC. Consider first the case of inherent clitics.

3.3.1. A solution for inherent clitics. In section 2.2.1 it was noted that inherent clitics in Romance languages may combine freely with DAT clitics irrespectively of their person specification. The illustrative example of Catalan in (7b) is repeated here as (42):

(42)   *Te   li*   vas declarar?
        2-inh.cl. 3-D declared
        'Did you declare your love to him/her?'

Syntactically, inherent clitics are like argumental clitics in that they are all base-generated in the same syntactic position inside the VP (Kayne 1975, Bonet 1994: 35 fn. 3). The two cases differ however as to the fact that only the latter bear a θ-role. The grammaticality of examples like (42) in Catalan thus constitutes an obvious counter-example to the GPCC, unless argumenthood is recognized as an additional condition for the application of the constraint. Simplicity considerations disfavor this option however, for argumenthood has been shown to be an irrelevant factor elsewhere (cf. allocutives and ethical-datives in section 3.4.2); the structural condition of locality incorporated in (41) is, on the contrary, independently motivated by the set of data discussed in the next section.

Chomsky's (1995) minimalist program provides the means for a reinterpretation of the opposition inherent vs. argumental clitics in structural terms. Recall that, as we noted earlier (section 3.1), checking of φ-features is subject to complementarity with θ-assignment under Chomsky's new system. Hence, arguments cannot stay in their base-generated positions but are forced to move outside the VP (or the *v*P in

the case of A-arguments) in order to check their φ-features. Obviously, such complementarity requirement is trivially satisfied within the VP in the case of inherent clitics, as they are non-thematic. Therefore, unlike argumental clitics, inherent clitics remain in situ. At the MC, the asymmetry results in different hierarchical structures, as illustrated in the simplified representations in (43):

(43) a. <u>Argumental clitics:</u>   b. <u>Inherent clitics:</u>
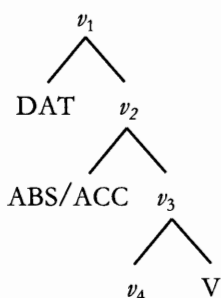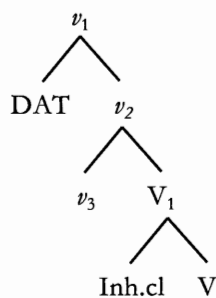
As it turns out, the locality relations between the two clitics vary from (43a) to (43b). Thus, while DAT and ACC clitics meet in the minimal domain of v in the structure in (43a), DAT and inherent clitics belong to separate minimal domains (those of v and V respectively) in (43b). Accordingly, the asymmetric pattern of argumental and inherent clitics will fully conform to our formulation of the PCC in (41).[38]

4.3.2. Restricting unwanted constraints. The most important flaw of the GPCC is its unrestricted power. The principle foresees a wide range of constraints that nonetheless are never or hardly ever found in natural languages. Some potential instances are, for example, the constraints on combinations of NOM(ERG) with ACC(ABS), NOM(ERG) with DAT, ABS with DAT —in the particular morphological structure found with unaccusative verbs in Standard Basque—, ALLO(ethical-datives) with ERG(NOM), etc.

In contrast to the GPCC, the locality condition introduced in (41) sets all these potential constraints aside. This is so because the relation between the two agreement specifications involved is non-local in all such cases: in the former three instances the first element of the pair ends up in the minimal domain of T, whereas the second is contained in that of v (or V); in the latter combination ALLOs (ethical-datives) are in the minimal domain of some high functional head —probably Mood—, whereas ERGs (NOMs) pertain to that of T.

By eliminating all these options, the PCC succeeds in restraining the set of potential constraints to exactly the desired cases in Catalan and Basque. To the best of my knowledge, our results also extend to the other languages listed in note 5. The only exception is Southern Tiwa, whose additional ERG-ABS and ERG-DAT

(38) Idiolectal variations with respect to inherent clitics and true reflexives (cf. note 12) reflect an unstable position in the system of reflexives in general, whereby their syntactic status fluctuates between argumental and non-argumental.

(cf. note 6) restrictions violate the PCC but fall under the more general GPCC. This indicates that the locality condition discriminating the PCC and the GPCC is subject to parametric variation in natural languages: unlike local constraints, which seem to be universal, the activation of restrictions across minimal domains may vary with the language.

4.4. Markedness Hierarchy

It follows from the previous discussion that the GPCC is a highly marked constraint in comparison to the PCC. Under our proposal such a property is formally captured by the fact that there is a unilateral implicational relationship between the two definitions in (24) and (41) respectively: thus, the former entails the application of the latter, but not the other way around.

More substantially however, our analysis correlates markedness with locality. The more local a relation between agreement markers is, the more likely the existence of a restriction becomes. This comes as a natural conclusion at least for two different reasons: on the one hand, selectional restrictions are typically local in all linguistic components; on the other hand, locality also plays a relevant role in the characterization of other linguistic principles governing the distribution of pronominal elements, such as for instance Binding.

5. Concluding remarks

Throughout these pages we have committed ourselves to a syntactic approach to Inflectional Morphology, at least partially. Our position relies on the observation that certain asymmetries in Catalan and Basque with respect to the application of the PCC have a clear syntactic nature (subjecthood, argumenthood). The accomodation of these data has led us to argue for the following cluster of properties of the Inflectional Morphology: 1. the organization of morphosyntactic features into hierarchical structures in the Morphology; 2. in corroboration of the first property, the active role played by X-bar-relational notions such as *c-command* and *minimal domain* in the application of morphological processes, in this case the PCC; 3. the contingency of Inflectional Morphology on syntactic processes, as for instance the syntactic operation Move (i.e. asymmetric PCC-effects with unaccusative verbs in Ergative languages); 4. the variable hierarchical relations among ϕ-features at the Morphological Component, which follow from the elimination of Agr^os from the theory and from the subsequent requalification of ϕ-features as components of arguments/adjuncts in the Syntax.

The validity of this general model of Inflectional Morphology has been firmly corroborated in the article by its adequacy to cover the full range of empirical data presented throughout these pages. Moreover, the analysis has been bolstered up by its explanatory power, insofar as it reduces the analysis of the PCC and other similar constraints to general and sound linguistic conditions such as c-command and locality.

The alternative lexicalist approach to the PCC has been partially disputed in section 2.2. The empirical adequacy of the lexicalist model can hardly be questioned, as it can introduce a great deal of morphological mechanisms —i.e. reference to environments, introduction of diacritic features, linear ordering, etc.— in order to characterize all kind of subtle asymmetries. On the contrary, our main criticisms are directed to the lack of generality and to the arbitrariness of these accounts, as well as to their failure to explain the basic properties of the PCC such as its univocity and its unmarkedness. As far as all these aspects are concerned, the morphosyntactic approach to the phenomenon of the PCC is clearly superior to a lexicalist account.

The conclusions in this article are not but a first step towards a better comprehension of these phenomena. Further investigations will have to consider several key aspects to the constraints that have had to be put aside for space considerations. One of those aspects is the asymmetric behavior exhibited by 1st and 2nd person on the one hand and 3rd person on the other. In passing, we have mentioned that such a property could be due to semantic and structural differences (cf. section 3.4 and note 30, respectively) between the two classes of pronominal elements, yet the topic deserves more serious consideration. A second important issue omitted in the article has to do with the nature itself of these restrictions. In other words, it is related to the question of why there should be any incompatibility at all between agreement markers. Our proposal in the article sets the basis for an appealing solution to the question: like pronominal elements in the syntax, agreement markers are also subject to Binding conditions —more specifically, to disjointness conditions. In the light of the role played by c-command and locality in our system, and on the basis of our characterization of personal pronouns as referentially distinct, this comes as a natural solution. The advantages of such an approach would be straightforwardly borne out, as we could link the (G)PCC to generic principles governing the distribution of pronominal elements in general. If correct, this conclusion would further support our main claim of the relation between syntax and Inflectional morphology.

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THE CAUSATION HIERARCHY, SEMANTIC CONTROL
AND EVENTIVITY IN NISGHA

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1. Introduction

In this paper I examine several varieties of causative constructions in the Tsimshian language Nisgha.[1] The causative constructions in this language contribute to the study of causation from both a semantic and syntactic perspective, because of the degree of specialization which has been assigned to the different causative predicates. Specifically, there are at least three morphologically distinct causative predicates, and each seems to have its own prototypical base predicate. The base predicates selected by the three different types fall into three basic categories: states, events, and actions. These causative predicates take the form of bound morphemes, and these morphemes can be stacked up onto the same base predicate, but when they are they must be interpreted in the correct order: action first, then event, then state. The order of interpretation does not appear to be driven by morphological bracketing, but rather seems to be determined by primarily semantic factors. The order of interpretation appears to provide evidence for certain characteristics of event concepts, and, specifically, they underscore the importance of the eventive/stative distinction and the agentive/non-agentive distinction in event composition. Moreover, the primary features which the different predicates select for appear to be aspectual; the thematic characteristics appear to be entailed in the aspectual event types. I therefore attempt to extrapolate from these facts to a view of event selection in which something which looks like

selectional restrictions on participants in an event is instead seen as restrictions on whole events.

2. A brief description of Nisgha sentence structure

Nisgha sentence structure displays a moderately high degree of syntactic ergative properties, has an essentially rigid VSO word order, and is (accurately) characterized by Bruce Rigsby as "analytic to mildly synthetic" (1975: 346). It does not display the highly synthetic properties of many Northwest Coast Salishan languages, and words usually consist of no more than three or four morphemes, though occasionally one encounters slightly longer sequences of five or six. The following examples should serve to introduce most of the basic morphology:[2]

(1) a. kslaqs-ə-t-s   džan-ł ħt'   (91: 25)
         kick-AFF-3$_i$ -DC Subj$_i$ -NC ball
         "John kicked the ball"   *Kslaksis Johnhl   hlit'.*
     b. yuk^w-t   łəmo:m-t-s   džan-t bɪl
         prog-3$_i$ help-3$_j$ -DC   John$_i$ -DM Bill$_j$
         "John is helping Bill"   *Yukwt hlimooms Johnt Bill.*

These two sentences exemplify two important clause types in Nisgha, which are often referred to as *Independent Order* (a) and *Dependent Order* (b). The terminology Independent and Dependent Order are applied from Bruce Rigsby's work on closely related Gitksan. Simplifying slightly, Independent Order clauses are main clauses without any overt Tense/Mood/Aspect marking; Tarpent (1991) has argued that the terminology is a misnomer, and that Independent Order clauses are really headless relative clauses. Under that analysis, the /-ə-/ morpheme, which has been notoriously difficult to properly analyze, is identified as a relative marker. I shall not comment on this debate in the present work, and I shall use the unenlightening but neutral label "AFF" (affix) in the interlinear glosses. Dependent Order clauses are those which occur embedded under some higher verbal predicate, though one must be aware that the class of predicates which precipitate the Dependent Order includes Negation and Aspectual predicates (such as the progressive predicate *yukw-* in example (1b)).

(2) The examples are given in roughly phonological transcription, as well as in standard Nisgha orthography (italicized). I have included the Nisgha orthography (which is largely a phonetic representation) so that Nisghas can read the examples in the familiar spelling, and the phonological transcriptions so as to display morphemes which disappear in a surface phonetic representation. The phonological transcription largely follows the IPA, though the following items are worth noting: x̲ = voiceless uvular fricative, ł = voiceless lateral fricative, glides followed by an apostrophe are glottalized, and stops followed by the apostrophe are ejective. As mentioned, I have given a roughly phonological transcription, however, I have given a more or less *phonetic* representation of vowel quality, since there are still complexities in the environments conditioning vowel quality which elude me. Finally, it should be noted that in the standard Nisgha orthography, the apostrophe is usually written over the glide (whereas I have placed it after the glide).

The examples used are either drawn from my field notes from July 1991 and March 1993, from Marie-Lucie Tarpent's reference grammar (to appear), phone conversations with native speakers, or else from the Nisgha Bilingual/Bicultural center's 1986 Nisgha Phrase Dictionary (NPD).

The morphemes labeled 3_i ,3_j are person agreement markers. The conditions under which they appear are rather complicated to explain, but are not directly relevant to the issues which concern us, so I will not attempt to explain them here (see Hunt (1991) and Belvin (1990) for a detailed discussion). DC, NC and DM mean *determinate connective*, *non-determinate connective* and *determinate marker* (respectively), all part of a class of morphemes which in the Tsimshian literature are usually called connectives; connectives carry one or two types of information: case and determinacy (and possibly indicate something about constituency as well). They appear suffixed to the word preceding the word they actually apply to. For instance, in example (1a), the NC /-ł/ is semantically linked to *łıt'* (ball), not *džan* (John).[3]

3. Nisgha causatives

As noted, Nisgha causatives show, in relation to most languages, an unusually high degree of specialization. There are three productive causative predicates in Nisgha, which take the form of bound morphemes. They affix to verbal or adjectival predicates. They can be roughly characterized as denoting (respectively): state causation, event causation, and action causation (where event and action are distinguished by semantic *control*; that is, actions are controlled events, and plain events are not controlled). The three most important causative morphemes in Nisgha are *si-* /sə-/, *-'in* /-'ən/, and *gwin-* /kʷən/. The three of these are described and exemplified below:

3.1. State causation with *si-*

This morpheme adds one argument to (mostly) intransitive, (mostly) stative predicates. The subject of an intransitive base predicate is demoted to direct object, and the problematic morpheme /-ə/ (AFF - "affix") must appear, at least if this occurs in an "independent order" (main clause) context. (In examples where there are names needing no translation, I have sometimes glossed the causer and the causee of transitives as Subj1 and Subj2, respectively)

(2)	al'aq-t	bıl	"Bill's angry."	(91: 41)
	angry-DM	Bill	*Al'akt Bill.*	

(3)	sə-'al'aq-ə-t-s		bıl-t džan	"Bill made John angry."	(91: 31)
	CAUS-angry-AFF-3_i-DC	Subj1$_i$-DM Subj2		*Si'al'agas Billt John.*	

(4)	saq-ł	laxha	"The weather is cold."	(NPD: 26)
	cold-NC	sky	*Sakhl laxha.*	
	(sharp)			

(3) The difference between the DC and the DM appears to me to be a difference in Case, where DC includes the information that Case has been assigned via a process of mediated Case assignment, while DM includes the information that Case has been assigned directly from a lexical head. See Belvin (1990) for justification of this claim.

(5) tɪm *s∂*-saq-∂-y'-ɬ   qant'imis-(i)n   (NPD: 159)
     FUT CAUS-sharp-AFF-1s-NC pencil-2s
     "I will sharpen your pencil."   *Dim sisagay'hl gant'imisin.*

si- also functions to express bringing into use or creation of a material object:

(6) *s∂*-'anax n'iːy'   "I made bread."
     make-bread 1s   *Si'anax n'iiy'.*

(7) *s∂*-hoːn n'iːy'   "I caught/processed fish."
     make-fish 1s   *Sihoon n'iiy'.*

It occurs with a few intransitive (arguably) non-stative predicates as well:

(8) *s∂*-wiyitkʷ-∂-t-s džan-ɬ ɬkutk'iɬkʷ   "John made the child cry."
     CAUS-cry-AFF-3ᵢ-DC Subj1ᵢ-NC child   *siwiyitgwis Johnhl hlkutk'ihlkw.*

(9) *s∂*-woq-∂-t-s džan-ɬ ɬkutk'iɬkʷ   "John made the child sleep."
     CAUS-sleep-AFF-3ᵢ-DC Subj1ᵢ-NC child   *siwogas Johnhl hlkutk'ihlkw*

The morpheme does not generally occur with transitive verbs, except when combined with other transitivizing morphology which attaches after *si-*.

3.2. Event causation with -'*in*:

This morpheme adds one argument to (mostly) intransitive (mostly) event predicates. The subject of the original base predicate is demoted to direct object, except where the base predicate is transitive, in which case the original subject appears in a PP, the object of the base predicate remaining in direct object position. -'*in* denotes *direct* causation, though not necessarily through physical force. No /-∂/ (AFF) morpheme appears to be present, even in the few cases where -'*in* attaches to transitive verbs.

(10) x̱sit-t džan   "John vomited."
      vomit-DM John   *X̱sitt John.*   (91: 31)

(11) x̱sit-'∂n-y'-t džan   "I made John vomit."
      vomit-CAUS-1s-DM John   *X̱siɬiniy't John.*   (91: 32)

(12) huːt-ɬ kyuwatan   "The horses ran away."
      run-NC horses   *Huuthl gyuwadan.*   (91: 13)

(13) huːt-'∂n-y'-ɬ kyuwatan   "I chased the horses away."
      run-CAUS-1s-NC horses   *Huut'iniy'hl gyuwadan.* (91: 14)

(14) woq-t džan   "John is sleeping"
      sleep-DM John   *woḵt John*

(15)   woq-*'∂n*-t   n'i:y'-ł pils   "The pills put me to sleep"
        sleep-CAUS-3s 1s-NC pills   *wok̲'ant n'iiy'hl pils*   (91: 54)

In addition to -*'in*'s use with event predicates, it is also used with certain adjectives to express something like a psych-predicate:

(16)   x̲lıl'-*'∂n*-s   džan-ł ma:y'   (T89: 666)
        delicious-CAUS-DC Subj-NC berries
        "John finds the berries delicious"   *x̲lil't'ins Johnhl maay'*

(17)   aski-*'∂n*-y'   wıla: hi-t   (NPD p.252)
        strange-CAUS-1s how speak-3s
        "I think he has a very strange way of speaking"   *asgit'iniy' wilaa hit*

As mentioned, it can also occur with transitive verbs, although this use is much less frequent:

(18)   ho:y-*'∂n*-t-s nox̲-t-ł   k'utac'   '∂-ł   łkutk'iłkʷ   (91: 90)
        use-CAUS-3$_i$-DC mother$_i$-3$_j$-NC coat   prep-NC child$_j$
        "His mother made the child use a coat"
                                          hooy'ins nox̲thl k'udats' ahl hlkutk'ihlkw

3.3. Action causation with *gwin-*

gwin- adds one argument to transitive or unergative predicates, and a second optional argument to transitives (the *causee* argument). The Subject of an intransitive base predicate will be demoted to direct object, and the Causer argument will appear in the matrix subject position. Moreover, when the base predicate is intransitive, the addition of *gwin-* will precipitate the appearance of the /-∂/ suffix:

(19)   c'ın-ł hanaq'   "The woman came in."
        come.in-NC woman   *Ts'inhl hanak̲'.*   (T82: 57)

(20)   *kʷ∂n*-c'ın-∂-t-s   dana-t   meri   "Donna had Mary come in."
        CAUS-come.in-AFF-3-DC Subj-DM Obj   *Gwin-ts'inis Donnat Mary*
                                                     (T82: 57)

When added to a transitive predicate, *gwin-* causes the original subject to be demoted to a prepositional object (if it is expressed at all), the direct object of the base predicate remains the direct object, and the Causer argument is expressed as the new Subject.

(21)   kslaks̲-∂-t-s džan-ł ḥt'   "John kicked the ball"
        kick-AFF-3$_i$-DC Subj-NC ball   *kslak̲sis Johnhl hlit'*   (91: 25)

               .

(22) *kʷən*-kslaḵs-ə-t-s   bɪ-ł   ħt'   'ə-s   džan
      CAUS-kick-AFF-3ᵢ-DC Subj1ᵢ-NC ball prep-DC Subj2
      "Bill had John kick the ball"   (91: 26a)
                                                gwin-kslaḵsis Bill-hl hlit' as John

gwin- is a typical *indirect causation* predicate, both semantically and syntactically; syntactically because the transitive causee is optional, and when present is expressed as a prepositional object, semantically because the causee must be acting with a relatively high degree of volitionality. Thus, not surprisingly, *gwin-* cannot be used with unaccusative base predicates, since these predicates do not readily admit a volitional interpretation for their subjects (for related discussion see Kural this volume):

(23) t'ɪkʷantkʷ-ł   c'ak'   (laẖ han'i:wan)
      fall-NC   plate   onto floor
      "The plate fell (onto the floor)."   (91: 10)
                                                T'igwantkwhl ts'ak' laẖ han'iiwan.

(24) * *kʷən*-t'ɪkʷantkʷ-ə-t-s meri-ł c'ak'   (laẖ han'i:wan)
      CAUS-fall-AFF-DC   Subj-NC plate onto floor
      "Mary had the plate fall *(onto the floor)."   (91: 12)

This is part of the rationale for referring to *gwin-* as the *action* causation predicate; while *si-* and *-'in* seem to link a Subject to a state or event by means of acting directly on the causee, *gwin-* can only link a Subject to a state or event through an intermediate action with an intermediary Agent. In this sense, *gwin-* is very similar semantically to causative *have* in English, so much so, in fact that we can generally determine whether a sentence with *gwin-* would be acceptable by looking at whether an analogous sentence with *have* would be acceptable.

Now, before going into any analysis, consider the fact that the three *cause* morphemes we've been discussing may be stacked up onto the same base predicate. Thus, in many cases predicates affixed with either state causation *si-* or event causation *-'in* can appear along with action causation *gwin-*, and in some cases we may even have all three concatenated onto the same base predicate. The possibilities are exemplified below:

gwin-si- ...

(25) *kʷən-sə*-hokyaẖ-t-ə-s   džan-ł wɪla: wɪl-ł kɪmxti-t 'ə-s   bɪl
      CAUS-CAUS-right-DF-AFF-DC Subj1-NC how do-NC sister-3s prep-
                                                                    DC Subj2
      "John had Bill settle his sister's (funeral) arrangements."
      Gwin-sihogyaẖdis Johnhl wilaa wilhl gimxdit as Bill.   (91: 117)

gwin- ... *-'in*

(26) yukʷ nə-*kʷən*-ho:y-'ən-ł k'uta:c'-ł   łkutk'iłkʷ   'ə-s meri
      prog 1s-CAUS-use-CAUS-NC coat-NC   child   prep-DC Subj2

"I'm going to have Mary put the child's coat on."   (91: 137)
Yukw ni-gwin-hooy'inhl k'udaats'hl hlkutk'ihlkw as Mary.

si- ... -'in

(27)   yukʷ-t   *sə*-wɩla:x-*'ən*-ł   *səm*-'alkyax̱   (NPD)
        prog-3s   CAUS-know-CAUS-NC   real-talk
        "(S)he is teaching Nisgha"

                                                          yukwt siwilaay'inhl sim'algyax̱

(28)   *sə*-x̱pɩc'aw-*'ən*-s   džan-t   bɩl
        CAUS-afraid-CAUS-DC   Subj-DC   Obj-NC
        "John frightened Bill"   (BA 11/3 - cf T p.679)
                                                          sax̱bits'aw'ins Johnt Bill

There are not very many predicates which may occur with both *si-* and *-in*, and it may be the case that these are lexicalized forms which are no longer analyzed by the speaker as two causatives. However, the fact that, at least in the case of *teach* (*siwilaay'in*), the stem *wilaax* (*know*) may be used with either *si-* or *-'in* separately (to mean *learn* and *inform/introduce*, respectively) would suggest that the meaning is still transparent.[4] Thus, it may still be the case that *siwilaay'in* is analyzed as containing two causatives, such that *teach* is understood not as *to make know*, but rather as *to make learn*, (a possible very literal interpretation being *to make someone make her/himself know*).[5]

gwin-si- ... -'in

(29)   *kʷən-sə*-wɩla:x-*'ən*-s   džan-ł   *səm*-'alkyax̱ *'ə*-s   bɩl   (BA 11/3)
        CAUS-CAUS-know-CAUS-DC   Subj1-DC   real-talk   Prep-DC Subj2
        "John had Bill teach Nisgha"   *gwin-siwilaay'ins Johnhl sim'algyax̱ as Bill*[6]

(4) Although I do not have firm evidence of this, I conjecture that *learn* was, at least at one time, conceived of literally as *make oneself know*.

(5) A reviewer notes that in these cases one might expect more than one logical subject to show up in a PP, given the fact that in both *-'in* and *gwin-* causatives formed with transitive bases, causees turn up in oblique phrases. This would be an interesting phenomenon to investigate, and does seem to bear on the bracketing problems I will be looking at. I have only one example in the data I have collected which displays multiple oblique subjects, as follows:

(i)   Dim gwin-si-wilaay-'in-in-hl   Nisga'a *a-hl   kubatk'ihlkw a-s Sam*
       FUT CAUS-CAUS-know-CAUS-2s-NC   Nisgha prep-NC   chidren   prep-DC Sam
       "(You will) have Sam teach Nisgha to the kids."   (93: 63)

Although it is obviously not sufficient to draw much in the way of sturdy generalizations, it is suggestive that the order of the obliques follows the order of the semantic bracketing (i.e. the outermost PP corresponds to the outermost causee, the inner PP corresponds to the inner causee). I will have to leave this interesting question for future work.

(6) At least one speaker has informed me that this sentence can also mean "Have John teach Nisgha to Bill".

(30)   *kʷ∂n-s∂*-x̱pɩc'aw-*'∂n*-s   meri-t   džan '∂-s bɩl
       CAUS-CAUS-afraid-CAUS-DC Subj1-DC Obj Prep-DC Subj2
       "Mary had Bill frighten John"   (BA 11/3 - cf T p.679)
       gwin-sax̱bits'aw'ins Maryt John as Bill

What is rather striking about these constructions with more than one causative is that there is a distinct order required in their interpretation. Specifically, it would seem that *si-* is always interpreted as having lower scope than *-'in*, and both *si-* and *-'in* are always interpreted as having lower scope than *gwin-*. Thus, *si-wilay-'in* must be interpreted as *cause someone to learn* (ie, *teach*) and never *cause someone to introduce/ inform someone*. Thus, the bracketing must be, semantically, as follows:

(31)   [[si[wilay]] 'in]

Likewise, *gwin-x̱sit'in* can only mean *have someone make somebody vomit*, and not *make someone have somebody vomit*. Thus, the semantic bracketing must be as follows:

(32)   [gwin [[x̱sit]'in]

One might argue that the reason for this apparent restriction is purely morphological, and the only reason we don't find a different bracketing semantically is that the morphological position of *gwin-* is higher than *-'in*. This objection is undermined, however, by the fact that other morphology may occur in what appears to be the same position morphologically, and yet be interpreted as *lower* in scope than *-'in*, as in the following:

(33)   *n'a:m*-x̱sit-*'∂n*-t   n'i:y'-ł kat   kust
       want-vomit-CAUS-3 1s-NC man DEM
       "That guy makes me want to throw up."
       N'aam-x̱sit'int n'iiy'hl gat gust.   (BA12/92)

(34)   *n'a:m*-wok̲-*'∂n*-t   n'i:y'-ł   pils
       want-sleep-CAUS-3s 1s-NC   pills
       "The pills make me want to sleep."
       N'aam-wok̲'ant n'iiy'hl pils.   (91: 55)

Moreover, it is well-known that morphological bracketing does not necessarily correspond to semantic bracketing (the well-known cases of bracketing paradoxes discussed, e.g., in Pesetsky 1985). Thus, appealing to purely morphological forces as a way of explaining the interpretive restrictions on Nisgha causatives seems a rather unsound strategy. This being the case, we are still left with the question of why *gwin-* must always be interpreted as having scope over *si-* or *-'in*, and why *-'in* appears always to be interpreted as having scope over *si-*.

4. The Eventuality/Theta-Grid mismatch

A first approximation of how the solution should go is based on the following (relatively standard) idea: states, events, and actions are semantic entities of different

types, and they will therefore assign different types of θ-roles. A typical *state* might license an *experiencer* argument, as in sentences like "John is afraid", but nothing higher on the θ-hierarchy. Events would license θ-roles as high as *actor* external arguments, as in "The ball hit the window", but they would not by themselves license *agents*, although agency could be added by a rule of construal (the difference, as discussed below, is related to volitionality and semantic control) (cf. Minkoff this volume). Finally, actions would license the agent θ-role. In fact, when looked at in this way, there may not be any need to speak of θ-role content (especially external argument θ-role content) as having any independent status; θ-role content will be largely determined by the kind of eventuality which is assigning them (see Davis this volume for related discussion).[7]

Under the view I want to develop, these eventuality types are genuine semantic objects, though they probably do not have the status of true primitives. Nonetheless, at a certain level of analysis, they can be appealed to as providing a reasonable level of explanatory adequacy. For a state-causation predicate, then, a rough event structure representation of the kernel of the sentence might look something like the following (external arguments underlined):

(35) $[_{\text{Event}}$cause <u>actor</u>,$[_{\text{State}}$afraid experiencer]]
　　　 si-　　　　　　　 <u>*xbitsaxw*</u>
　　　 make　　　　　　　 *afraid*

For an event causation predicate, we might have the following:

(36) $[_{\text{Action}}$cause <u>agent</u>,$[_{\text{Event}}$vomit actor]]
　　　 -'in　　　　　　　 <u>*xsit-*</u>
　　　 make　　　　　　　 *vomit*

Finally, for action-causation, we would have something like the following:

(37) $[_{\text{Action}}$cause <u>agent</u>, $[_{\text{Action}}$kiss agent,...]]
　　　 gwin-　　　　　　　 *humc'ax-*
　　　 have　　　　　　　 *kiss*

Now consider what happens when one embeds one type of causative construction under another. State causation under event causation or action causation works fine, as depicted below:

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(7) This kind of approach to θ-role assignment will no doubt remind the reader of the Vendler/Dowty eventuality distinctions. Recall Dowty's proposal for the three basic eventuality types of BECOME, CAUSE, and DO, informally defined as follows:

　　　BECOME denotes a situation in which a state Σ begins to exist.

　　　CAUSE denotes a situation in which one event E_1 causes another event E_2 where the causation is defined counterfactually, essentially $\neg E_1 \vDash \neg E_2$.

　　　DO denotes a situation in which some sentient entity controls an event E.

　　　A sentient entity may DO a causing or becoming event, and may DO an event which causes a becoming event. However, a DO or CAUSE event will never be the Σ in a BECOME event (since neither DO nor CAUSE are states). Moreover, one will probably suppose that a DO event will never serve as E_2 in a CAUSE event, since DO assumes that the begining of the event E is a sentient entity's volition, and not some other event E_1.

(38)   a.   [$_{Action}$ cause, <u>agent</u>, [$_{Event}$cause, <u>actor</u>, [$_{State}$ afraid, experiencer]]
                  -'in   si-   xbitsaxw
                  make   make   afraid
           -as in: saxbits'aw'ins Johnt Bill as Mary
           "John made Bill afraid of Mary"   (BA: 1/93)
       b.   [$_{Action}$ cause, <u>agent</u>, [$_{Action}$ cause, <u>agent</u>, [$_{State}$ afraid, experiencer]]
                  gwin-   si-   xbitsaxw
                  have   make   afraid
           -as in: gwin-saxbits'axwdis Johnt Bill as Mary
           "John had Mary frighten Bill"   (BA: 1/93)

The reader may have noticed that I have not been consistent in the structures just given. Specifically, I offered *si-* as an *event* in (38a), but as an *action* in (38b), and, accordingly, given it an *actor* external argument in (a) and an *agent* external argument in (b). The justification for this is that in (a), the causee may or may not be interpreted as volitional, depending on the circumstances, while in (b), it must be. The idea is that what distinguishes an *actor* from an *agent* is that, while an *actor* is the external argument of an event predicate, an actor is not acting under its own volition. An *agent*, on the other hand, is. This distinction (or some terminological variant) appears frequently in the relevant literature for a variety of reasons which I cannot go into here (but see, e.g., Jackendoff 1983, 1990, Croft 1991, Kural 1996).[8]

Actions and *agency* are thus seen as arising from an *additive* operation which takes *events* as its starting point. This operation can arise either by lexical specification or by *rules of construal* in the sense of Jackendoff (1991), so the fact that *gwin-* selects for an *action* can be satisfied by rules of construal which take the event to an action (but see Minkoff this volume). Jackendoff characterizes these rules as operating on his Lexical-Conceptual Structures, which are similar to the event structures which we have been employing (though with a much more highly decomposed thematic specification). He investigates the problem of explaining cases like "The light flashed until dawn." Such sentences are interesting to him because normally "flash" denotes a single, bounded (in fact instantaneous) event of flashing, but in this sentence can only plausibly be interpreted as a series of flashes (i.e. the flashing is iterative). He argues that this interpretation arises through a rule of construal which operates on conceptual structures. This particular rule adds the conceptual element PL (plural) to the conceptualization of the flashing event; since flashing events are *lexically* specified as being individual bounded events, PL must be added to render the event congruent with the *until dawn* adverbial.

PL, may, of course, be present in lexical material (e.g. the plural number morpheme *-s*), but it does not have to be to appear in an LCS representation of a sentence. Under appropriate conditions it may also be added by a rule of construal. Note, on the other hand, that a lexically specified PL element could not be deleted by a rule of construal. Thus, *the dogs* cannot be interpreted as singular under appropriate conditions, because it is lexically fixed as plural.

(8) One proposal which is of more immediate interest is made by Kyle Johnson (1986) for the *threaten* class of verbs, wherein he proposes that there is actually a syntactic difference between the positions whence *actor* versus *agent* are assigned.

I assume that this kind of operation is responsible for the possibility of embedding plain *events* (i.e. not *actions*) under *gwin-*. Thus, actions may be created from events, since this presumably involves the addition of something like volition or semantic control, but events cannot be created from actions, since this involves subtraction of the relevant notion.

This being said, consider now what happens when we attempt to embed an event or action causation predicate under the state-causation predicate; we would end up with the following:

(39)   [$_{Action}$ cause, <u>agent</u> [$_{Action}$ cause, <u>agent</u>, [$_{Action}$ kiss, <u>agent</u>,patient]
     si-   *gwin-*   *humts'a<u>x</u>*
     make   *have*   *kiss*

The problem with this is that it does not fit with the argument requirements of *si-*, as given in (35) above, since *si-* requires a stative complement. One might object that we should be able to apply the same kind of rules of construal to save this structure as I appealed to earlier to account for why *si-* can occur under *gwin-*. However, the only rule of construal which could save this structure would be a *subtractive* one, presumably disallowed. That is, because *action* is "bigger" than *state*, we cannot convert them to the appropriate elements by adding anything. Thus, we end up with a mismatch between eventuality type if we attempt to put the action predicate *gwin-* within the scope of state causation predicate *si-*.

Exactly the same argument can be used to explain why we cannot put action causation *gwin-* within the scope of event causation *-'in*, as well as why we cannot put *-'in* within the scope of *si-*. In the case of *-'in* under *si-*, since events are larger and more complex eventualities than states, we would be required to subtract something in order to satisfy the argument requirements of *si-*. Likewise, in the case of *gwin-* under *-'in*, since actions are larger and more complex elements than events, we would be required to subtract something in order to satisfy the argument requirements of *-'in*, namely the volitional part of agency. This last point confirms the distinction mentioned earlier, namely that *actions* are truly distinct from *events*. In the next section we compare the Nisgha causative data with some semantically parallel cases in English.

5. *Make* and *Have* causatives in English

In English the functional equivalents of Nisgha *si-*, *-'in* and *gwin* are covered by both morphological and periphrastic causatives. *si-* (the state causation morpheme) is translated by either morphological causatives (in particular, the zero causative morpheme seen in cases like *John angered Bill*, or the *-en* suffix seen in *John frightened Bill*). It is also sometimes translated periphrastically, as in *John made Bill mad*. Similarly with Nisgha *-'in*. It may be translated either by lexical items which contain a causative entailment like *chase away* (viz. *make run away*), as well as periphrastic causatives with *make* (e.g. *John made Bill fall*). Importantly, though, neither *si-* nor *-'in*

may be translated to a periphrastic causative which expresses indirect causation, for example *have* or *get* causatives. Nisgha will always express such causatives as *gwin*. Interestingly, just as there seems to be a restriction in Nisgha against interpreting a construction with both *gwin* and *-'in* as the *-'in* (event) causative causing the *gwin* (action) causative, there seems to be a restriction in English against putting a *have* causative under a *make* causative. Thus, we find that the sentence in (40a) is anomalous, compared to (40b) which is fine:[9]

(40)   a.   ?#Jane made Bill have Frank leave.
        b.   Jane had Bill make Frank leave.

Notice that eventive causative *have* generally requires both its own subject, as well as the embedded subject, to be volitional. Thus, (41a) below is fine while (41b,c) are impossible.

(41)   a.   John had Bill jump.
        b.   #The noise had Bill jump.   c.   #The fire had the shadows jump.

This contrasts markedly with English *make*, which can take either a volitional or non-volitional subject or embedded subject:

(42)   a.   John made Mary jump.
        b.   The noise made Mary jump.   c.   The fire made the shadows jump.

Thus, it seems that we can make the following generalization: *make* embeds an *event* (not an action), and causative *have* is always interpreted as an action.[10] Thus, causative *have* may not be embedded under *make* for the same reason that *gwin-* must be interpreted as having wider scope than *-'in*.

Authier and Reed (1991) appeal to the notion of semantic *control* in order to account for properties of the French *faire-à* causative construction. They define *control* as "the possibility of canceling what is denoted by the predicate if the subject of this predicate decides to stop doing it" (p.202).[11] For example, for them, the subject of the predicate *accélérer* (accelerate) has control over the predicate, while the sub-

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(9) Thanks to Kevin Russell for bringing this fact to my attention.

(10) This requires us to claim that *jump* is an *event*, not an action, though it may be converted to an action by the rule of construal discussed earlier. The fact that *make* may also take IP complements which appear to be unambiguously *actions* (e.g. "John made Bill kiss Mary") requires some explanation. I can only give a sketchy answer to the question here. My perspective is that *make*, in some way which I have yet to fully apprehend, erases the volitionality part of actions. One way of viewing this would be to follow Chomsky's recent proposals regarding the question of how an Agency interpretation arises. He claims (1995) that Agency arises when a verbal element is generated as the complement of another (lighter) verbal element (his v-V configuration). Though he does not expound, one infers that the former contains the basic core of the verbal predicate, the latter the volitionality part. *Make*, then, could be seen as selecting just for the V part of the predicate. I have argued (1996) for the basic correctness of this type of approach to explaining a range of phenomena found in the causative *have* paradigm, some of which I shall touch on in the coming discussion. Whatever the case, there is clearly more that needs to be said about the facts in (41,42), though I will have to defer such an investigation for future work.

(11) Many others invoke such a concept as well, often in connection with explanations for similar (causative) data, grammatical voice phenomena, Case marking, and so on. For discussion, see Klaiman (1991).

ject of the predicate *tomber* (fall) does not. This would appear to be the relevant property for explaining which predicates can appear under *gwin-*. That is, only predicates which assign *control* to their subjects may be complements of *gwin-*. Moreover, *control* would also appear to be the relevant property for explaining which predicates can appear under *have*.

One must ask, however, how it is that causative predicates like *gwin-* and *have* place this requirement for *control* on the causee. Is it the case that the matrix causative predicates place a selection restriction on the embedded subject (i.e. the *causee*)? Certainly, in many accounts of causative formation the answer to this question is "yes," with the rationale being that there is some process of complex predicate formation. If the causative predicate combines with the base predicate to form a larger predicate with more than two arguments, then of course it is normal for the causee to have restrictions placed on it. However, if the causative predicate is seen as selecting only a subject (the causer) and a complement event, such a restriction would be unexpected.

I will ultimately argue that the latter view is correct, as suggested in the introduction, and that the apparent restrictions on the causee are side-effects of the real restriction, which is on the base event. Before going further into that view, however, I wish to consider one recent version of the complex predicate formation view.

6. Argument array composition and some of its shortcomings

Alsina (1992) has argued for an argument array composition approach to causation (see Kural this volume in relation to Alsina's proposal). Based on data primarily from Bantu languages, he argues that the causee in causative constructions like Nisgha's has a place both in the CAUSE predicate's array as well as the base predicate's array. That is, rather than taking the common view that causatives are two-place predicates which take the causer as the first argument and the caused event as the second, he argues that at least in some languages, causatives entail a three-place predicate, which takes a causer, a caused event, and a patient. The patient argument of the causative predicate may be linked to either the agent or the paitent of the base predicate, leading to direct or indirect causation interpretations (respectively). Thus, the argument structure of this type of causative with a transitive base predicate will, before linking takes place, be as in (43).

    (43)   [agent, patient,[$_{\text{Event}}$ agent, patient]]

The patient argument of the causative may then link either to the embedded agent, or the embedded patient, yielding a direct causation interpretation in the former, an indirect causation interpretation in the latter, as indicated below:

    (44)   a.   Direct causation: [agent, patient, [$_{\text{Event}}$ agent, patient]]

            b.   Indirect causation: [agent, patient, [$_{\text{Event}}$ agent, patient]]

Alsina's approach is not, strictly speaking, incompatible with the foregoing analysis of the causative constructions in Nisgha, and as far as I can tell, nothing in his account would be jeopardized by making the finer grained distinction between different types of eventualities proposed above (i.e. *state*, *event*, *action*, versus just *event*). However, the finer grained distinctions are unnecessary if we can glean the differences solely by linking an internal argument of the cause predicate to different arguments of the embedded clause.

I will illustrate with *gwin-* and *-'in*, although the same argumentation could be applied to *gwin-* and *si-* or *-'in and si-*. Suppose the argument arrays associated with *gwin-* and *-'in* are as in (45), similar to Alsina's arrays for Bantu causative predicates:

(45)   *-'in* [actor,patient,event]   *gwin-* [agent,patient,event]

These predicates look very much alike at first glance, however, there will be a difference in the way they compose with their base predicates. While *-'in* will link the patient argument to the embedded event's *agent*, *gwin-* will link the patient argument to the embedded event's *patient*, as shown in (46):

(46)   a.   *-'in*   [actor, patient, [$_{Event}$ agent, patient]]

b.   *gwin-* [agent, patient, [$_{Event}$ agent, patient]]

This difference will account for the difference in the semantics of the two causative types. In the *direct* causation sentence with *-'in*, the direct cause meaning arises out of the link between the *patient* of the matrix array and the *agent* of the embedded predicate's array. This is exactly the same claim made by Alsina for the double object causative construction in some Bantu languages. In the case of the indirect causation sentence with *gwin-*, the link will be between the patient of the matrix array and the patient of the embedded array. This will leave the embedded agent free to be interpreted just as an *agent*, without the patient meaning coloring its interpretation. (Note that the agentive causee may be left unexpressed.)

The foregoing again follows Alsina's analysis of Bantu causation, although in those languages, both meanings may arise with the same causative predicate. In those languages, the single causation morpheme allows for both linkings discussed above. In Nisgha, there is specialization: the direct causation morpheme has a different shape than the indirect causation morpheme.

Consider now what happens under this analysis when both *gwin-* and *-'in* appear on the same base. When *gwin-* is treated as the highest predicate w.r.t. linking at argument structure, we might have a linking something like that in (47a), assuming the bracketing given in (47b):

(47)   a. [$_{Event}$ agent, patient, [$_{Event}$ agent, patient, [$_{Event}$ actor, patient]]]

      gwin   *'in* ·   *ho:y*

     b. [*gwin*- [[hooy]-*'in*]]

The rationale for the link between the highest *patient* and lowest *patient* is that we should build argument structures from the inside out. Thus, we first link the *patient* of the direct causation predicate with the *actor* of the base predicate, since the direct causation morpheme is closest to the base in the bracketing we are considering. We then go to the next bracketing, which contains the indirect cause predicate, and link its patient to the base predicate's patient. However, the base predicate is a complex predicate, and the only unlinked patient of this complex predicate is the lowest patient. Thus, I assume this is the required link to be made.

Now consider what happens if we bracket the causative predicates the other way, so that *gwin*- is closer to the base predicate than -*'in*, as in (48b). If we do this, we would end up with an argument structure looking like that in (48a) below:

(48)   a. [$_{Event}$ agent, patient, [$_{Event}$ agent, patient, [$_{Event}$ actor, patient]]]

      -*'in*   *gwin*   *ho:y*

     b. [[*gwin*- [hooy]]-*'in*]

The question is then, why is such a structure prohibited? A possible answer is that *agents*, being volitional, don't like to be linked to patient arguments. Since the external argument of *gwin*- must always be volitional, the link to the patient leaves us with a kind of θ-role incompatibility. In this way, it seems, Alsina's apparatus give us the means to explain at least one of the Nisgha causatives scope facts.

In spite of demonstrating some explanatory power, though, there appear to be some basic problems with Alsina's approach. In a nutshell, Alsina's analysis would seem to predict that indirect causation shouldn't arise in places where it does, and moreover, that direct causation should arise in places where it doesn't. Alsina connects the different types of linkings to differences in meanings, arguing essentially that the linking in (46a) (from higher patient to lower agent) results in a meaning of direct causation, while that in (46b) (from higher patient to lower patient) results in indirect causation. The kernel of the problem is that he connects the linking of CAUSE's patient argument to the embedded predicate's internal argument to indirect causation.

But now consider what happens in intransitive predicates. For -*'in*, everything works fine. We get the linking below, and the meaning of direct causation:

(49)   -*'in* [$_{Action}$ <u>actor</u>, patient, [$_{Event}$ subject]]

However, for *gwin-*, there is a problem, in that *gwin-* should only be able to link a patient to a patient. However, if we have an unergative base predicate, the only argument there is in the embedded predicate is an agent. We thus would expect that only unaccusatives should be able to serve as base predicates for *gwin-*, but in point of fact, it is just the opposite: *only* unergatives are able to serve as bases for *gwin-*.

This problem is not unique to Nisgha. Alsina argues that the French causative construction employing *faire-V* with the causee in the dative corresponds to direct causation linking (versus the *faire-par* construction, which corresponds to indirect causation linking). However, as discussed in Reed (1990), in fact *both* the direct and the indirect causation interpretation are available for this construction. Thus, for a sentence like (50) we may interpret the causee as acting either under his own volition, or else as under the control of the causer:

(50) J'ai fait manger des epinards à mon fils.
       "I made/got my son (to) eat spinach."

Likewise with an unergative predicate, there are two possible interpretations, although there is only one embedded argument, leading to the prediction that only direct causation should be possible:

(51) J'ai fait lire mon fils.
       "I made/got my son (to) read."

The problem then, seems to be the reliance on the linking mechanism to yield the correct meanings.[12] We do not encounter such a problem if we allow causative predicates to select different kinds of eventualities as their internal arguments. When the causative selects a *state*, the relation between the causee and the state will always be interpreted as a non-volitional one, because *states* don't assign their subjects an *agent* role. When the causative selects an *event*, again, the relation between the causee and the event will be non-volitional, because *events* assign only an actor role. It is only when the causative selects an *action* that the causee can (and must) be interpreted as having a volitional relation to the base eventuality.[13]

7. Some related phenomena

In this section I briefly look at some related phenomena in English, and remark on the overall view of grammar which this study favors. First, notice that English causative *have* constructions are ECM constructions; the embedded subject appears

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(12) This problem with Alsina's approach has been noted elsewhere, as for example in Ackerman and Moore (1996: 8ff), who present an interesting alternative to either Alsina's approach or the approach advocated herein. Their explanation is based on the idea that the grammatical encoding of the causee is selected *paradigmatically* (versus syntagmatically); that is, semantic alternants will find syntactic correspondences across causative construction types.

(13) There are probably causative predicates which may select either an event or an action, possibly also a state, event or action. Allowing for this kind of latitude in selection should pose no problem for the proposal I am making.

with objective case, and, if coreferent with the matrix subject, is realized as an anaphor:

(52)   a. Mary had him dance.   b. John had himself elected.

One commonly observed phenomenon in ECM sentences is that the head of the embedded IP is subject to aspectual constraints. In this regard, ECM constructions diverge from complex sentences with an embedded CP. In the latter, the restrictions placed on the embedded clause are on the head of CP, not IP. Thus, in (53a) below, the CP must be interrogative, but the embedded IP itself does not seem restricted in any particular way. On the other hand, the ECM constructions in (54) present us with an embedded IP which is restricted to perfect or present continuous forms; that is, the matrix verb restricts the aspectual type of the IP, unlike regular tensed CP complement constructions:

(53)   a. John wondered/asked if Mary witnessed the execution.
       b. John wondered/asked if Mary had witnessed the execution.
       c. John wondered/asked if Mary was witnessing the execution.
(54)   a. John believed/knew Winnie to have witnessed the execution.
       b. John believed/knew Winnie to be witnessing the execution.
       c. *John believed/knew Winnie to witness the execution.

Now, if we make the assumption that the apparent requirement for a volitional causee in *have* and *gwin* causatives is in reality a requirement on the head of the IP, then the ECM character of causative *have* provides another indication that when a causative predicate puts a requirement for volitionality / control on its complement, it is a requirement on the embedded IP, and not an effect of argument array composition.

Throughout this article, I have made reference to the idea that apparent requirements on the causee in causative constructions are in reality requirements being placed on the base event. These requirements seem closely tied to aspectual requirements, again suggesting a parallelism between aspectual requirements placed on the head of ECM embedded predicates and requirements placed on the head of the IP of embedded causative predicates. One further piece of evidence that aspectual type can give rise to exactly the kind of thematic variation which causatives seem concerned with comes from the causative *have* paradigm which I made reference to earlier. Recall that when *have* takes an eventive complement, it generally appears to require both its own subject and the subject of its base event to be acting volitionally (examples repeated below for convenience). However, when *have* takes a stative complement (which for our purposes includes continuous aspectual forms), not only may the causee be acting non-volitionally, but the matrix subject may be as well (c,d, respectively).

(55)   a. John had Bill jump.   b. #The noise had Bill jump.
       c. John had the wax melting into a cup.
       d. The sun had the wax melting all over the counter.

Thus, we see that there is an extremely close relation between aspect/eventuality type, and the type of θ-role which is assigned to the causee.

If we combine the claim that actions are distinct from events w.r.t. a feature like volitionality or control with the claim that events and states are distinct semantic entities, we can speculate on a featural specification on predicative heads, where typical states are [–eventive, –control], events are [+eventive, –control] and actions are [+eventive, +control].[14]

8. Conclusion

Nisgha causative constructions give us reason to believe that expressions of eventualities in natural langauge differ along at least two distinct semantic parameters, eventivity and semantic control. These differences in eventuality type confirm a semantics in which *states*, *events* and *actions* are distinct. These eventuality types may be specified in the selection restrictions of predicates which take constituents expressing eventualities as one of their arguments. In the cases we examine here, causative predicates select for one of these three eventuality types as their internal argument. We have argued that this selection is concerned with the eventuality type itself, and should not be characterized as being concerned with composition of argument arrays, contra Alsina (1992).

I have presented my view as an alternative to not only Alsina, but the general view whereby causatives are created via a process of complex predicate formation. I do not see this article as providing a definitive closing argument against the complex predicate view, but rather as presenting an alternative which takes as highly significant the undeniable fact that there is a very close relation between aspectual event type and θ-role properties of a predicate. If my view can be applied successfully to a language like Nisgha, which would seem a perfect candidate for the complex predicate view, then it seems worth considering whether it is generally a more valid approach to the analysis of causatives.

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(14) Though I note the possibility of a predicate which is [-eventive, +control], and in fact argue in other work that this is the correct characterization of alienable possession. I have chosen to ignore the question of whether the hypothetical features proposed here have any visibility in the syntax, though elsewhere I have argued they do (see Belvin 1996 on both of these points).

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DEEP UNACCUSATIVITY AND ZERO SYNTAX IN ST'ÁT'IMCETS

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1. Introduction[1]

This paper makes the following universal claims:

(I) All predicates are based on roots which are lexically associated with a single, internal argument.

(II) All transitive and all unergative predicates are derived by morphosyntactic operations, which may be phonologically null.

I will provide evidence for both claims from St'át'imcets (Lillooet), a member of the Northern Interior branch of the Salish family.[2] Salish languages are particularly pertinent for the analysis of sub-lexical syntax, since they give overt morphological expression to many operations which are covert in highly lexicalized languages such as English. I will show that the claims in (I-II) are equally applicable to English-type languages, given the independently available mechanism of zero-morphology (Pesetsky 1995).

(I-II) have obvious implications for the proper formulation of the unergative / unaccusative distinction. Salish evidence is consistent with an approach such as that of Hale and Keyser (1993, this volume), in which *unaccusatives* are primitive and unergatives derived. I-II challenge accounts such as Levin and Rappaport-Hovav (1995), who treat *unergatives* as primitive and (a significant subset of) unaccusatives as derived, or more traditional analyses where *both* are distinct types of primitive intransitive (Rosen 1984, Grimshaw 1987, Van Valin 1990, Zaenen 1993). The issue of argument mapping in Salish and its place in a cross-linguistic typology forms part

(2) St'át'imcets is spoken in southwestern mainland British Columbia. It has currently probably fewer than two hundred remaining fluent speakers, all over fifty years of age. There are two major dialects, Upper or "Fountain" (abbreviated henceforth as U) and Lower or "Mount Currie" (abbreviated as L).

of the broader theoretical question of whether argument selection properties are derived directly from the meaning of a predicate (as encoded in the form of a Lexical Conceptual Structure) or are mediated by (sometimes abstract) morpho-syntactic structures and operations. I will argue, following Davis and Demirdache (1995), that argument structure mapping takes place directly from event structure representations, generated by an aspectual calculus adapted from that of Pustejovsky (1991). Under this conception, thematic roles are derivative; predicates are lexically equipped with a single, underspecified "theme" argument (see also Déchaine 1993), and other theta roles —in particular, that of *agent*— are added via aspectual operations (see Minkoff and Demirdache this volume for related discussion).

Aside from its relevance to a general theory of argument structure, the paper also addresses a parallel debate within Salishan linguistics as to the appropriate classification of roots. On the one hand, it has been claimed that argument structure differences between predicates are part of the meaning of roots, and are thus irreducible properties of lexical items (Thompson and Thompson 1992, Gerdts 1991, Howett 1993, Thomason and Everett 1993, Thomason 1994). On the other hand, it has been argued that argument structure in Salish is radically decompositional; under this conception, all roots have the same (minimal) argument structure, with differences being derived from different affixation possibilities (Egesdal 1993, Davis 1994b).[3] The debate has centred around a small set of agentive un-

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(3) Mattina (1994) argues that a verbal 'base' rather than a root should be taken as the appropriate elementary unit of lexical (de-)composition in (Colville Okanagan) Salish. She takes a base to be "a form of any morphological complexity which corresponds to a single lexeme", where lexeme is an arbitrary form-meaning association. Her criteria for rejecting the root as a viable unit of meaning are based on the non-compositionality of many root + suffix combinations. However, her approach is far too restrictive, in that it eliminates all but completely productive and compositional morphological operations. Though clearly there are non-compositional forms in St'át'imcets, and these may get reanalyzed as roots, such cases are overwhelmingly outnumbered by fully compositional combinations. Moreover, non-compositionality is not restricted to a particular level of the lexicon, or even the lexicon itself; the existence of non-compositional (idiomatic) structures in the syntax, for example, does not preclude an analysis of their internal structure. In fact, Mattina's bases seem to cut across established morphological divisions in arbitrary ways; on her analysis the Okanagan reflexive suffix, for example is both base- and stem-forming.

A further argument for employing the root rather than the base as the fundamental unit of morpho-syntax can be made on the basis of a kind of back-formation process which I have observed with several fluent St'át'imcets speakers. These speakers reanalyze opaque root + suffix combinations to create new unaccusative roots. Two examples are given below:

(i) $\sqrt{zw} + a + t \rightarrow \sqrt{zwat}$ = "be known"   (ii) $\sqrt{may} + \check{s} \rightarrow \sqrt{may\check{s}}$ = "be built"

Evidence that reanalysis has taken place comes from (a) the existence of the original root in forms such as the following:

(iii) $\sqrt{zw} + a + tmix^w$ = "to know the land"   (iv) $\sqrt{may} + t$ = "to build"

and (b) the existence of the (opaque) suffixal element in a number of other forms, such as

(v) $\sqrt{inw} + a\frac{1}{t} + t$ = "to say what ?" (intr.); cf. (vi) $n + \sqrt{k^wi\frac{1}{t}} + \check{s} + t\partial n$ = "creator"; cf
    $\sqrt{inw} + a + n$ = "to say what ?" (tr.) $\sqrt{k^wi\frac{1}{t}} + in$ = "to prepare (tr.)"

The existence of the back-formed roots in (i) and (ii) thus shows us that new roots may be formed from opaque [root + affix] combinations, and that these roots are invariably ascribed intransitive (more specifically, unaccusative) meanings. This constitutes a powerful argument for the psychological reality of the root, rather than the base, as the elementary unit of morphological composition.

affixed intransitives, termed *control roots* (Thompson 1985). If control intransitives are primitive, then roots must be lexically specified as either unaccusative or unergative. I will argue, on the contrary, that control intransitives are derived, showing that their behaviour precisely parallels the class of overtly derived intransitives variously referred to in the Salishan literature as "middles" (Thompson and Thompson 1992), "anti-passives" (Gerdts 1988), and "low transitivity predicates" (Thomason and Everett 1993).[4]

The paper is organized as follows. In section 2, I present a brief overview of the structure of the St'át'imcets predicate. Section 3 discusses the basic morphological division between transitive and intransitive predicates. Section 4 discusses non-control roots, and section 5 introduces the various classes of derived intransitive. Section 6 presents an aspectual analysis of in/transitivity in St'át'imcets, closely based on that of Davis and Demirdache (1995). In section 7 I turn to a detailed analysis of control roots, showing that they are best analyzed as being derived by zero-morphology. Finally, in 8 I consider the implications of the analysis presented here for a general theory of zero morphology and lexical representation.

2. Structure of the predicate in St'át'imcets

The St'át'imcets word displays complex internal structure. A simplified schema is given below:[5]

(1) [[procl[nom1 [[[nom2[sta[[loc[[ROOT] asp]] lex] abst]] in/trans] obj] erg] subj] encl]]
       4   3 2   1   1   2   3   4

Four word-internal domains can be distinguished, based on evidence from both prosodic and morphological criteria. The innermost, (1), contains the root, the only element which is obligatory in all predicates. The stem-level domain, (2), contains a variety of aspectual and other afffixes, including transivitizers and intransitivizers, but excluding pronominal affixes. The latter occupy (3), the outermost affixal domain, which is equivalent to the level of the morphological word. Domain (4),

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(4) While it is possible that other Salish languages may turn out to differ from St'át'imcets, it is likely that the generalizations made here characterize other members of the family. Certainly, the evidence currently available is compatible with the position I adopt: this includes work on Nɬeʔkepmxčín (a.k.a. Thompson; Northern Interior; see Thompson 1985, Thompson and Thompson 1992, Howett 1993), Halkomelem (Central/Coast; see Gerdts 1988, 1991), and Sélis (a.k.a. Flathead/Montana Salish; Southern Interior; see Thomason & Everett 1993, Thomason 1994, Egesdal 1993). More systematic comparative work is obviously necessary in order to define more precisely the permissible range of variation between Salish languages.

(5) Abbreviations are as follows: ABS=abstract suffix, ACT=active intransitivizer, AUT=autonomous intransitivizer, ASP=aspectual, CAU=causative transitivizer, CHA=characteristic suffix, CMP=completive marker, CNJ=conjunctive subject clitic, DES=desiderative, DET=determiner, DEV=developmental suffix, DIR=directive transitivizer, FRE=final reduplication, IMM=immediate suffix, INC=inchoative marker, IND=indirective transitivizer, IRR=irrealis marker, ERG=ergative, IRE=iterative reduplication, LEX=lexical suffix, LOC= locative prefix, MID=middle suffix, NOM1= syntactic nominalizer, NOM2= lexical nominalizer, OOC=out-of-control marking, OBJ=object suffix, OBL=oblique, QUO=quotative marker, PAS=passive, PL=plural, POS=possessive, PRG=progressive, EXI=existential, REL=relational transitivizer, RFL=reflexive suffix, SG=singular, STA=stative prefix, SUB=subject, TRE=total reduplication.

which contains various pro- and en-clitics, is the maximal domain of word-level stress assignment and corresponds to the prosodic word.

Stem-level affixation has a variety of functions in St'át'imcets. The three most important ones are (a) aspectual modification (b) lexical suffixation and (c) in/transitivization.

(a) *Aspect* pervades St'át'imcets grammar, being marked stem-internally by reduplication, infixation, prefixation, and suffixation, stem-externally by clitics, and word-externally by aspectual auxiliaries. The main stem-level aspectual markers are given in Table 1 below (for a more complete survey, see van Eijk 1985):

Table 1

Stem-level aspectual markers

FORM	TYPE	NAME	GLOSS	MEANING
(ə)š-	prefix	stative	STA	resulting state
-p/-ʔ-	suffix/infix	inchoative	INC	change of state
-əm	suffix	characteristic	CHA	continuing state
-t	suffix	immediate	IMM	continuing state
$[C_1C_2][C_1\acute{V}C_2]$	reduplication	total redup.	TRE	inherent state
$[C_1C_2][C_1C_2][C_1C_2]$	reduplication	iterative redup.	IRE	iteration
$[\acute{V}C_1][C_1]$	reduplication	final redup.	FRE	process
-wíl̓x	suffix	developmental	DEV	change of state

Several of these markers will be discussed at greater length below, so I defer further comments until then.

(b) *Lexical suffixes* are an areal phenomenon of the Pacific Northwest; they consist of a large set (> 100 in St'át'imcets) of referential suffixes which modify the meaning of a root. There are two types of lexical suffix, somatic (body-related) and non-somatic; the two types may be distinguished by their relation to intransitivizers, which induce a medio-reflexive (self-directed) reading with somatic but not with non-somatic suffixes (discussed in more detail below).

(c) St'át'imcets, like other Salish languages, encodes transitivity through a set of *transitivizers* and *intransitivizers*. Transitivizers convert a stem into a (morphologically dyadic) transitive predicate; intransitivizers convert a stem into a derived intransitive predicate. Transitivizers will briefly be discussed in 3 below; intransitivizers will be extensively discussed in section 5.

Stem-external affixes, which attach only to transitivized stems, consist of object suffixes (including reflexive and reciprocal markers) and the third person ergative suffix -aš. Other person markers (subjects and possessors) may function as clitics rather than affixes. Subject and possessive markers further differ from person affixes in attaching to both transitive and intransitive stems.

3. Transitives vs intransitives

The principle transitivizers in St'át'imcets are given below:

Table 2

Transitivizers[6]

FORM[7]	NAME	GLOSS
-Vn('), -Vnš	directive	DIR
-š/ č	causative	CAU
-min(')	relational	REL
-xit	indirective	IND

All predicates without a transitivizer in St'át'imcets are formally intransitive; they cannot appear with object suffixes or the third person ergative marker, even when their meaning might entail two arguments:[8]

(2) a. *qańim=ɬkan*
hear=1SG.SUB
"I heard."

 b. **qańim-tumí =ɬkan*
hear-2SG.OBJ=1SG.SUB
"I heard you."

 c. *qańim-ənš-túmi =ɬkan*
hear-*DIR-2SG.OBJ*=1SG.SUB
"I heard you."

(3) a. *ʔúqʷaʔ*
drink
"S/he drank."

 b. **ʔúqʷʔ-aš*
drink-*ERG*
"S/he drank it."

 c. *ʔúqʷʔ-anš-aš*
drink-*DIR-ERG*
"S/he drank it up."

The ungrammatical cases in (2b) and (3b) differ from their grammatical counterparts in (2c) and (3c) only in the absence of a (directive) transivitizer. It is important to note that this is a formal requirement; the *meaning* of the (b) cases is perfectly coherent. In fact it is even possible to supply an overt object Determiner Phrase with formally intransitive predicates like those in (2-3b), as long as there is no corresponding object pronominal morphology:

(4) *qańim=ɬkan*   *kʷu=wáʔ*   *ƛ̓iq*
hear=1SG   SUBDET=PRG   come
"I heard someone coming"

(6) There are a several minor transitivizers which act like combinations of the principle types illustrated in Table 2. The transitivizer *ənš- anš*, for example, has a directive meaning (i.e., it indicates full control over the action) but causative morphology (it takes causative object suffixes); I gloss it as directive for the purposes of this article.

(7) FORM refers to the usual morphophonological realization of an (in)transitivizing suffix. 'V' indicates that the vowel in the suffix is variable; it is generally realized either as a copy of the root vowel or one of the unmarked vowels *ə/a*. Glottalization of resonants, indicated by a parenthesized apostrophe, is also variable, and depends on stress and other phonological factors.

(8) Examples are transcribed in standard North West coast phonemic script. Underlined vowels are retracted. Affixal boundaries are indicated by a dash (-), clitic boundaries by an equals sign (=).

(5) *?úqʷa?*   *kʷu=kápi*   *ti=kʷúkʷpi?=a*
     drink   DET=coffee   DET=chief=EXI
     "The chief drank coffee."

Following van Eijk (1985), such cases will be referred to as *with-object* construc-
tions. They will play an important part in the discussion below.

Intransitive predicates may be cross-classified along two dimensions. The first is
morphological; it distinguishes *unsuffixed* from *suffixed* intransitives, the latter
containing an overt intransitivizer. The principle intransitivizers are given in Table 3
below:

<div align="center">

Table 3

Intransitivizers

FORM	NAME	GLOSS
-Vm(')	middle	MID
-xal	active	ACT
-ləx/ ilx	autonomous	AUT

</div>

The second dimension is that of *control* (see Demirdache this volume). For our
purposes, control may be equated with agency; for discussion of possible dis-
tinctions between the two notions, see Thompson (1976, 1985). All suffixed intran-
sitives are control predicates; however, unsuffixed intransitives are divided up into
control and non-control subclasses. We thus have the following distribution:

<div align="center">

Table 4

Morphological and semantic properties of intransitive predicates

	+ CONTROL	– CONTROL
SUFFIXED	√	*
UNSUFFIXED	√	√

</div>

Table 4 shows an incomplete correlation between control and derivational status;
while all suffixed intransitives are [+control], unsuffixed intransitives can apparently
be either [± control]. I shall argue that this initial picture is misleading, since
"unsuffixed" control intransitives are in fact derived by zero morphology. If such an
analysis is correct, then all control predicates are morphologically derived; this will
allow us to maintain a uniform view of the St'át'imcets lexicon as containing only
unaccusative (non-agentive) roots, with all other forms being derived by affixation.

Most of the rest of the paper will be devoted to establishing this claim. In the
following sections, I first introduce the various classes of intransitive predicate,

beginning with non-control cases, before turning first to suffixed and then to non-suffixed control intransitives. I will show that both morphological and syntactic evidence argues for a classification of intransitive predicates that treats all the control cases as derived, in opposition to the non-derived non-control cases.

4. Non-control intransitives

There are more than two thousand non-control intransitive predicates in St'át'imcets; in fact, this class comprises the vast majority of roots in the language. Aside from nominals (6a), the class includes predicates with an adjective-like stative interpretation as in (6b), predicates of psychological state as in (6c), location and change of location predicates (6d), weather verbs (6e), change of state predicates (6f) and a set of both eventive and stative patient-oriented predicates (in 6g) described by van Eijk (1985) as "passive in character".

(6) a. Nominal predicates:[9]

míxaɬ	"(to be) a bear"	*tmixʷ*	"(to be) land, earth"
qʷuʔ	"(to be) water"	*šawt*	"(to be) a slave"
ʕʷəlín	"(to be) a belly"	*ʔúšaʔ*	"(to be) a huckleberry"

   b. Adjectival predicates:[10]

ḳax	"to be dry"	*kʷḷíʔ*	"to be green or yellow"
q̓ʷəl	"to be cooked, ripe"	*x̣ẓum*	"to be big"
qəl	"to be bad"	*c̓íp̓*	"to be cold (object)"

   c. Psychological predicates:

páqʷuʔ	"to be afraid"	*qlil*	"to be angry"
ɬáxil	"to feel cold"	*thin*	"to be proud"

   d. Location and change of location predicates:

ƛ̓əp	"to be under"	*čixʷ*	"to get there, reach"
lak	"to lie in a particular place"	*ƛiq*	"to get here, arrive"

   e. Weather predicates:

xəɬ	"to be cold (weather)"	*kʷiš*	"to fall/to rain"

   f. Change of state predicates:

ɬax̣ʷ	"to recover, get well"	*x̣ʷak̓*	"to wake up, be awoken"
ẓuqʷ	"to die"	*ƛak̓*	"to rise (water)"

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(9) Nominals form a distinct class of intransitives in St'át'imcets, as argued by van Eijk and Hess (1986), Demirdache and Matthewson (1995), Matthewson and Davis (1995). Though I shall exploit some N-V diagnostics at points, the issue is for the most part irrelevant to the central claims of the paper.

   (10) The label "adjectival" is not meant to imply a commitment to the existence of adjectives as a separate morphosyntactic class in St'át'imcets (though see Demirdache and Matthewson 1995); in fact, my classification of adjectives as unaccusative rather than unergative predicates tends to indicate that they are a sub-class of stative verbs (see Baker 1996).

    g. Patient-oriented predicates (antitransitives):

qaṁt	"to be hit by a thrown object"	łwal	"to be left behind"
ʔuš	"to be discarded"	šək	"to be hit with a stick or whip"
ʔaćx̱	"to be seen"	tup	"to be punched"

While all the roots in (6) may be used as predicates without (overt) derivational morphology, most non-control roots are bound. Bound roots may surface only if they have undergone one or more of the aspectual processes summarized in Table 1. Nevertheless, I will continue to use the term "unsuffixed" for all predicates which lack an overt in/transitivizer, since their control (agentive/non-agentive) status is not affected by such aspectual modification. This can be seen in (7), where I give some typical paradigms with bound roots:

(7) a. √puł   "boil"

         špuł   "boiled"   (stative)

         púł.əł   "boiling"   (final reduplication)

    b. √ʒax̱ʷ   "melt"

         ʒa-ʔ-x̱ʷ   "melt"   (inchoative)

         ʒəx̱ʷ.ʒáx̱ʷ "soft, melted consistency"   (total reduplication)

    c. √ʒaẃ   "annoy"

         ʒaẃ-t   "annoyed"   (immediate)

         ʒáẃ-ʔ-əẃ   "get fed up"   (inchoative)

Note that not all aspectual processes apply to all roots. This is partly a function of lexical semantics, but also of idiosyncratic variation in affixation possibilities.

4.1. Non-control intransitives are unaccusative

In this section, I claim that all non-control intransitive predicates take a single argument, to which they assign an internal theta role: that is, they are unaccusative.

While the uncontroversially unaccusative predicates in (6a-f) pose no immediate problem for this analysis, the patient-oriented predicates in (6g), whose counterparts in English are canonically transitive, do not appear at first sight to be likely candidates for unaccusative status. We shall term these cases *antitransitives*. The English glosses in (6g) suggest that antitransitives might be detransitive, i.e. derived from underlyingly transitive predicates by a type of lexical passivization process. However, St'át'imcets has a syntactic passive; it turns out that a comparison of anti-transitives with passives reveals a number of contrasts that can only be accounted for if passives are detransitivized while antitransitives are fundamentally intransitive.

First of all, antitransitives are morphologically non-derived: they consist of bare roots (though these may be extended by lexical and aspectual suffixes, with no effect on argument structure). In marked contrast, passives are uniformly derived

from transitivized predicates, which invariably contain an overt transitivizer. (8) gives passive equivalents of the antitransitives in (6g).

(8) a. *qámt-š-tum*
      hit-*CAU*-3SG.PAS
      "S/he was hit (by a thrown object)."

    b. *ɬwal-ən-čáləm*
      leave-*DIR*-1SG.PAS
      "I was left behind."

    c. *ʔuš-č-tánəmwit*
      discard-3PL.PAS
      "They got thrown out."

    d. *šək-ən-čím*
      hit-*DIR*-2SG.PAS
      "You got hit (with a stick or whip)."

    e. *ʔac̓x-ən-túmuləm*
      leave-*DIR*-1PL.PAS
      "We were seen."

    f. *zəwat-ən-tamɬkál̓ap*
      know-*DIR*-2PL.PAS
      "You folks were known."

The morphological distinctness of passives and antitransitives is mirrored in the syntax. Since antitransitives are unaccusatives, we expect to find no implicit agent effects of the type that typically surface with passives. In other words, we should be able to replicate the English unaccusative-passive contrast illustrated in (9):

(9) a. The boat sank (*by the French). b. The boat was sunk (by the French).

This is indeed the case. Passive agents may be introduced by an oblique marker,[11] as shown in the textual examples in (10), which are taken from van Eijk and Williams (1981).

(10) a. *X̌áq̓=kʷuʔ*   *ʔayɬ*   *X̌áq̓=kʷuʔ*   *ʔáti?*
      cross=QUO   then   cross=QUO   to.there
      ʔac̓x-n-ə́m=kʷuʔ   *ʔə=ki=ʔuxʷalmíxʷ=a*
      see-DIR-PAS=QUO   *OBL*=PL.DET=native-EXI
      "Well then he crossed over, he crossed over there, and he was seen by the people".

    b. *niɬ=X̌uʔ=ʔáta?*   *š=čún-tanəmwit*   *ʔə=ti=škixəz̓ʔ=íh=a...*
      so=then=there   NOM1=tell(DIR)-3PL.PAS   *OBL*=DET=mother=3PL.POS=EXI
      "So then that's what they were told by their mother."

In contrast, antitransitives do not permit oblique agents:

(11) a. **qámt*   *(l)=ta=šqáyxʷ=a*   *ta=twə́w̓.w̓ət=a*
      get.hit   *(OBL)*=DET=man=EXI   DET=boy=EXI
      "The boy was hit by the man."

---

(11) There are two oblique markers in St'át'imcets, both derived from locative prepositions. The first, based on the directional preposition *ʔə=* is characteristically employed by older speakers, and thus shows up frequently in textual examples; however, it seems to be in the process of being replaced as a marker of oblique DPs by the locational preposition *l=*, at least in the grammars of speakers younger than sixty.

b. *qámt-š-tum̓*   *⊦ta=šqáyxʷ=a*   *ta=twə̓w̓.w̓ət=a*
get.hit-CAU-3PAS   *OBL*=DET=man=EXI   DET=boy=EXI
"The boy was hit by the man."

Where an oblique is present with an antitransitive predicate, it is interpreted as a locative or sometimes as an instrument, but never as a volitional actor; hence the absence of an agentive interpretation in (12a), in contrast to the agentive interpretation of the oblique with the passive in (12b):

(12) a. *ʔxan̓=ɬkan*   *⊦ta=míxaɬ=a*
    get.hurt=1SG.SUB   *OBL*=DET=bear=EXI
    "I got hurt by the bear."(only ok if bear is dead, and I tripped on it, for example)

  b. *xan̓-š-tum̓xáləm*   *⊦ta=míxaɬ=a*
    get.hurt-CAU-1SG.PAS *OBL*=DET=bear=EXI
    "I got hurt by the bear." (i.e., it attacked me)

I conclude that, on the basis of both morphological and syntactic evidence, antitransitives are unaccusatives, thus forming a unitary morpho-syntactic class with the other non-control roots in (6).

5. Suffixed control intransitives

We now turn to control (agentive) intransitives, beginning with those which are suffixed with an overt intransitivizer. As can be seen in Table 3 above, there are three main intransitivizers, labelled *active*, *autonomous*, and *middle*. Subsections 5.1, 5.2, and 5.3 will deal with each of them in turn; 5.4 will deal with cases where lexical suffixes appear without an overt intransitivizer.

5.1. Active intransitives

Active intransitives are suffixed with the intransitivizer *-xal*:

(13) *káx-xal* "to dry" (intr.)   *ʔúš-xal* "to discard" (intr.)
  c̓íp-xal "to cool" (intr.)   *páqʷuʔ-xal* "to scare" (intr.)
  číxʷ-xal "to bring things" (intr.) *šək-xál* "to hit with a stick (intr.)

-xal creates an atelic intransitive predicate with an agentive subject and an implied object; the latter is generally interpreted as generic, non-specific, or collective, and may be expressed overtly through the *with-object* construction. This is shown in (14-15):

(14) *kíč-xal* *kʷu=pəták* *ʔi= ʔuxʷalmíxʷ=a*
  lay-ACT *DET=potato* PL.DET=people=EXI
  "The people plant potatoes."

(15)   *puɬ-xal=ɬkán=kɬ*   *kʷu = ʔú.ʔšaʔ*
       boil-ACT=1SG.SUB=IRR   *DET=egg*
       "I will boil some eggs."

The use of the non-referential determiner *kʷu* is typical of DPs in the *with-object* construction, as are both the generic reading of the object in (14) and the irrealis mood in (15). In fact, active intransitives are generally restricted to these environments. In telic contexts they are replaced by directive transitives:

(16)   *puɬ-uñ=ɬkán=tuʔ*   *ʔi=ʔú.ʔšʔ=a*
       boil-DIR=1SG.SUB=CMP   PL.DET=egg=EXI
       "I boiled some (specific) eggs."

I will henceforth refer to the class of intransitive predicates which entail an understood object (and therefore take the *with-object* construction) as *implied-object* intransitives.

When suffixed to stems containing lexical suffixes, both the active intransitivizer and the directive transitivizer yield an interpretation paraphrasable as "to act on the referent of the suffix", as shown in (17-19) below. However the contrast between the non-delimited reading of actives (the b cases) and the delimited reading of directives (the c cases) is retained:

(17)   a. √*šup*   "to be scratched"
       b. *šúp-xn-xal*   "to scratch people's feet" (in general)
       c. *šúp-xn-añ*   "to scratch someone's foot" (in particular)

(18)   a. √*c̓aw̓*   "to be washed"
       b. *c̓aw̓-ákaʔ-xal*   "to wash people's hands" (in general)
       c. *c̓aw̓-ákʔ-an*   "to wash someone's hands" (in particular)

(19)   a. √*kax*   "to be dry"
       b. *kax-alíw̓s-xal*   "to dry people's whole bodies" (in general)
       c. *kax-alíw̓s-ən*   "to dry someone's whole body" (in particular)

An important and distinctive property of active intransitives concerns the distribution of two near-homophonous š-prefixes: one of these marks stative aspect (see the examples in 7 above), while the other is nominalizing.[12] š-prefixed predicates suffixed with the active marker are invariably interpreted as nominal rather than stative, as shown in (20).

(20)   *(a) Active intransitive*   *(b) Non-control*

       š-məč-xál = "something written" (e.g., a letter)   *š-məč* = "written"
       š-púɬ-xal = "something boiled" (e.g., potatoes)   *š-puɬ* = "boiled"
       š-tíx̱-xal = "something put on the table" (e.g., plates) *š-tíx̱* = "set (of table)"

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(12) In fact, there are two separate types of nominalization in St'át'imcets, and in Salish more generally. One is derivational, and creates nouns, the other is inflectional, and creates nominalized subordinate clauses. While the same š nominalizer is responsible for both, it is a prefix when used derivationally and a proclitic when used inflectionally. I gloss the syntactic nominalizer as "NOM1" and the lexical nominalizer as "NOM2" throughout this paper.

The forms in (20a), unlike those in (20b), act like ordinary nouns; for example, they can co-occur with an adjectival modifier in the complex nominal predicate construction (21), head relative clauses (22), and take possessive pronominal morphology in predicate position (23), all of which are diagnostic tests for noun-hood in St'át'imcets (see Demirdache and Matthewson 1995, Matthewson and Davis 1995).

(21) *?áma*   *š-məč-xál*   *ti=?aċx-ən=án=a*   *?i=nátxʷ=aš*
      good   NOM2-write-ACT   DET=see-DIR=1SG.CNJ=EXI   when=day=3.CNJ
      "It was a good piece of writing that I saw yesterday."

(22) *čə?.č?-ən-áš*   *ni=š-məč-xál=a*   *ni=?um-ən=án=a*
      tear.TRE-DIR-ERG   DET=NOM2-write-ACT=EXI   DET=giveDIR=1SG.CNJ=EXI
      "He tore up the writing that I gave him."

(23) *n-š-məč-xál*   *ni=čə?.č?-ən-áš=a*
      1SG.POS-NOM2-write-ACT   DET=tear.TRE-DIR-ERG=EXI
      "My writing was what he tore up."

Note that the contrast between the nominal interpretation of š-prefixed active intransitives and the stative interpretation of š-prefixed non-control predicates is clearly related to the implied object property, since the nominal derived from an active intransitive refers to its understood object, which is absent in the (fundamentally intransitive) non-control cases.

5.2. Autonomous intransitives

The second main set of derived intransitives in St'át'imcets is suffixed with *-ləx*, which has a stressed allomorph *-ílx*. Following Thompson and Thompson (1992), I refer to this as the *autonomous* suffix.[13] The autonomous suffix is incompatible with other intransitivizers or the directive transitivizer: compare the autonomous examples in (24-26) with the somatic suffix-intransitivizer combinations in (17-19).

(24) a. √*šup*   "to be scratched"
      b. *šúp-ləx(*-xal/ *-am/ *-an)*   "to scratch oneself"

(25) a. √*ċaẃ*   "to be washed"
      b. *ċáẃ-ləx(*-xal/ *-am/ *-an)*   "to wash oneself"

(26) a. √*ḱax*   "to be dry"
      b. *ḱáx-ləx(*-xal/ *-am/ *-an)*   "to dry oneself"

The autonomous intransitivizer creates self-directed predicates with a reflexive interpretation, as seen in (27):

(13) This reflects the fact that the St'át'imcets form is clearly cognate with its *Nłe?kepmxčín* counterpart *-ỳx*, and emphasizes that it is not, as van Eijk (1985) suggests, a deviant lexical suffix (with a meaning such as 'body'), but a bona fide intransitivizer.

(27) λál-ləx   "to stop (oneself)"   táɬ-ləx   "to stand up"

ləʕw-ílx   "to hide (oneself)"   q̓wəʒ'-ílx   "to dance"

xwák-ləx   "to wake (oneself)"   λk̓íw-ləx   "to climb"

I refer to this as the *medio-reflexive* interpretation.
Autonomous intransitives do not take an overt object:

(28) ləʕw-ílx   š-John   (*š-John)
    hide-AUT   NOM2-John   (*NOM2-John)
    "John hid (*John)."

They also contrast with active intransitives with respect to š-prefixation; instead of the nominal reading associated with the latter, š-prefixation of autonomous intransitives yields a resulting state interpretation parallel to that associated with ordinary non-control predicates:

(29) š-λál-ləx = "stopped" (animate)   cf. š-λal = "stopped" (inanimate)
    š-k̓íč-ləx = "lying down" (animate) cf. š-k̓ič = "lying down" (inanimate)
    š-tíx-ləx = "sitting down at table" (animate) cf. š-tix = "set" (table)
    š-ləʕw-ílx = "hiding" (animate)   cf. š-ləʕw = "hidden" (inanimate)

These stative predicates fail tests for noun-hood: they cannot occur in the final position of a complex predicate (30), act as the head of a relative clause (31), or take possessive morphology in predicate position (32):

(30) *ʔáma š-ləʕw-ílx   ti=pún-an=a   ʔi=nátxw=aš
    good *NOM2-hide-AUT* DET=find(DIR)-1SG.CONJ=EXI when=day=3.CNJ
    * "It was a good hiding (place) that I found yesterday."

(31) *pəl̓-p-š=kán   núkwuń ni=š-ləʕw-ílx=a
    lost-INC-CAU=1SG.SUB again *DET=NOM2-hide-AUT=EXI*
    ni=pún-an=a
    DET=find(DIR)=1SG.CNJ-EXI
    * "I lost the hiding (place) that I found."

(32) *n-š-ləʕw-ílx   ni=pəl̓-p-š-án=a
    1SG.POS- NOM2-hide-AUT DET=lose-INC-CAU-1SG.CNJ=EXI
    * "My hiding (place) was what I lost."

The stative š-prefix is not compatible with all autonomous predicates. It only attaches to those with an underlyingly telic event structure (i.e. one involving a change of state leading to a resulting state), as in (29). Atelic predicates may not be š-prefixed at all, as shown in (33):

(33) (*š-)n-q̓áy-ləx   = to swim (no stative variant)

    (*š-)q̓wəʒ'-ílx   = to dance (no stative variant)

    (*š-)ɬəʕw-ílx   = to jump (no stative variant)

Note that the autonomous intransitivizer is not associated with a particular aspectual interpretation. It generally inherits the aspectual characteristics of the root to which it attaches, in contrast to the active intransitivizer, which invariably yields an atelic predicate.

In Table 5, I summarize the differences between active and autonomous intransitives.

Table 5

Diagnostic properties of active and autonomous intransitivizers

	interpretation	allow overt-object	aspect	s-prefixation	allow lexical suffix
active (-xal)	implied object	yes	atelic	nominal	yes
autonomous (-ləx)	medio-reflexive	no	undefined	stative/*	no

5.3. Middle intransitives

The third class of suffixed intransitives is suffixed with *-Vm(')*. This is the St'át'imcets version of a pan-Salish morpheme most frequently glossed as *middle*, a term which I adopt here. In St'át'imcets, middle-marked predicates may be interpreted either like implied object or like medio-reflexive intransitives, depending on the stem to which they attach:

(34)   *Implied object middles:*

ləʕʷ-úm   "to hide (stuff)" (intr.)   xʷíl-əm   "to seek" (intr.)

ƛəqʷʔ-úm   "to sew" (intr.)   táw-əm   "to sell" (intr.)

kʷúl-əm   "to make" (intr)   ʔácx-əm   "to see" (intr.)

(35)   *Medio-reflexive middles:*

šáxʷ-əm   "to take a bath"   šúp-um   "to breathe"

čáxʷ-am   "to wade"   xáƛ-əm   "to go up hill"

múc-um   "to stoop"   ʔumík-əm   "to go upstream"

The implied-object middles in (34), like active intransitives, may express their understood object overtly, as shown in (36):

(36)   a.   *nił*   *ti=šmúɬač=a*   *táw-əm*   *ti=cúqʷaẑ=a*

            FOC   DET=woman=EXI   sell-MID   DET=fish=EXI

            "It's the woman that sold the fish."

       b.   *xʷíl-əm*   *kʷu=mixaɬ*   *ti=wáʔ*   *píx-əm̓*

            seek-MID   DET=bear   DET=PROG   hunt-MID

            "The hunter is looking for a bear."

c. *k̓wúl-əm*   *ti=ćlaʔ=a*   *ti=šyáqčʔ=a*
   make-MID   *DET=basket=EXI*   DET=woman=EXI
   "The woman is making a basket."

Š̌-prefixation yields a nominal interpretation with implied-object, again like active intransitives:

(37) *š-ləʕw-úm*   = "something hidden"   (cf *š-ləʕw*   = "hidden")
      š-q̓wə́l-əm   = "something cooked"   (cf *š-q̓wəl*   = "cooked, ripe")
      š-ʔíλ̓-əm   = "something one sings"   (cf *š-ʔíʔiλ̓*   = "singing")

In contrast, the medio-reflexive middles in (35) may not take an object DP: either an oblique marker must be introduced, as in (38a), or an object is simply ungrammatical, as in (38b):

(38) a. *x̱áλ̓-əm*   *(ɬ=)ti=š-qwə́m=a*   *ti=wáʔ*   *píx-əm̓*
         climb-MID   *(OBL=)DET=NOM2-mountain=EXI*   DET=PRG   hunt-MID
         "The hunter climbed the mountain."

      b. *šúp-um*   *k̓wu=š-púλ̓t*   *ʔi=wáʔ?*   *ɬap-an̓-ítaš*
         breathe-MID   *DET=NOM2-smoke*   PL.DET=PRG   put.out-DIR-PL.ERG
         ti=š-ʕwə́l.ʕwəl-p=a
         DET=NOM2-forest.fire-INC=EXI
         "The ones who put out the forest fire were breathing smoke."

Moreover, with medio-reflexive middles *š*-prefixation is either ungrammatical or yields a resulting state interpretation:

(39) *(*š-)čáxw-am*   "to wade"   (no *š*-prefixation permitted)
      *(*š-)x̱áλ̓-əm*   "to go up hill" (no *š*-prefixation permitted)
      š-múc-um   "stooped"   (stative *š*-prefixation)

Thus, middle-marked predicates show ambivalent behaviour: they either act as though they were suffixed with the active intransitivizer (in which case they allow an object and yield a nominal interpretation with *š*-prefixation), or they behave as if they were suffixed with the autonomous intransitivizer (in which case no object is possible and *š*-prefixation never yields a nominal interpretation). The most obvious explanation for this ambivalence is that the middle suffix is ambiguously intererpeted as either an active or an autonomous intransitivizer, a hypothesis supported by morphological evidence in the form of predicates which take either middle and active marking, as in (40), or middle and autonomous marking, as in (41).

(40) a. *q̓wə́l-əm*   ~   *q̓wəl-xál*   "to cook, roast " (intr.)
      b. *k̓wúl-əm*   ~   *k̓wúl-xal*   "to make, create" (intr.)
      c. *nẕáw-əm*   ~   *nẕáw-xal*   "to draw water"
(41) a. *máɬ-am*   ~   *máɬ-ləx*   "to rest"
      b. *láp-əm*   ~   *láp-ləx*   "to cover oneself with a blanket"

In these cases, the alternating suffixes are in free variation, confirming the ambiguous behaviour of the middle marker -*Vm(')*. On the other hand, predicates which allow both the active (-*xal*) and autonomous (-*ləx*) intransitivizers always show a regular and predictable contrast in meaning:

(42) a. *ʑúxʷ-xal*   "to move (stuff)"   *ʑúxʷ-ləx*   "to move (oneself)"
      b. *ćáẁ-xal*   "to wash (stuff)"   *ćáẁ-ləx*   "to wash (oneself)"
      c. *kʷíš-xal*   "to drop (stuff)"   *kʷíš-ləx*   "to drop, lower (oneself)"

While in general the middle suffix can either induce an implied-object or a medio-reflexive reading, depending on the root, there are cases where it is morphologically restricted to one or the other. When it is suffixed to a stem containing a somatic lexical suffix, the middle invariably yields a medio-reflexive interpretation paraphrasable as "to act on one's body part":

(43) a. √*šup*   "to be scratched"   *šúp-xn-aṁ*   "to scratch one's foot"
      b. √*ćaẁ*   "to be washed"   *ćáẁ-ák̓ʔ-am*   "to wash one's hands"
      c. √*kax*   "to be dried"   *kax-alíẁs-əm*   "to dry one's whole body"

This interpretation is significant because it contrasts with the implied object interpretation yielded by the combination of a somatic lexical suffix with the active intransitivizer -*xal* (cf. 17-19), and is clearly related to the standard medio-reflexive interpretation of the autonomous suffix -*ləx* (cf. 24-26).

In contrast, there are two environments where the middle yields only an implied-object reading. One case involves roots which normally take -*xal* and switch to -*Vm(')* if the stem undergoes diminutive or augmentative reduplication (marked by a period in the examples below) :

(44) a. *šəq-xál*   "to split wood"
         šə́q.šq-əm   "to split wood into many pieces"
      b. *čáš-xal*   "to feel by touching"
         čá.čš-əm   "to feel around for something"
      c. *nšíx-xal*   "to move food from one pot to another"
         nší.šx̲-əm   "to move food from one pot to several others"

As the glosses indicate, the middle-marked reduplicated forms retain the object-oriented interpretation of the active intransitive forms on which they are based.

The second case involves nominals. When the middle suffix is added to a nominal root, the resulting combination is interpreted as "to hunt, gather, collect, get the referent of" the stem (see van Eijk 1985: 145).

(45) a. *púʔy'axʷ*   = "mouse"   *puʔy'axʷ-ám*   = "to catch mice"
      b. *pípa*   = "paper, mail"   *píph-am*   = "to get the mail"
      c. *(š)ćúqʷaʑ'*   = "fish"   *ćúqʷaʑ'-am*   = "to fish"

To summarize, the interpretation of the middle suffix varies between that of the active (implied object) and autonomous (medio-reflexive) intransitivizers. When it

attaches directly to a non-nominal root, its interpretation depends on the semantics of the root itself, as shown in (34-35). On the other hand, when the root is extended by a somatic lexical suffix, as in (43), the middle has an exclusively medio-reflexive interpretation; in contrast, when the stem is reduplicated, as in (44), or is attached to a nominal root, as in (45), it receives an exclusively implied-object interpretation. This distribution is summarized in Table 6:

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Table 6

Distribution of the middle-marker Vm(ʕ):

</div>

	√V	√V +diminutive	√V +somatic suffix	√N
medio-reflexive	+	−	+	−
object-oriented	+	+	−	+

5.4. Intransitives derived via lexical suffixation

There is a fourth class of derived intransitive predicate, which unlike the other three, does not involve an overt intransitivizer. Instead, members of this class seem to be derived directly by lexical suffixation:

(46) a. √c̓x̣   = "to be clean"
      -alč   = lex.suff."inside of house, room"
      c̓x̣-alč   = "to clean the house"

   b. √ƚaʔ   = "to be close"
      -qš   = lex.suff. "nose, (by metaphorical extension) point, direction"
      ƚaʔ-qš   = "to get across the water"

   c. √k̓ax   = "to be dried"
      -(a)ƚc̓aʔ   = lex. suff. "inside of body, (by metaphorical extension) flesh, mind"
      k̓áx-ƚc̓aʔ = "to dry meat"

As can be ascertained from the glosses, these [root + lexical suffix] combinations are agentive, and thus resemble derived intransitives. In fact, I suggest that they are derived intransitives. To be precise, they contain a concealed middle marker, a zero-variant of the *Vm(ʕ)* intransitivizer. I give three arguments for this contention: (i) the relevant forms are not based on agentive roots; (ii) the lexical suffixes are not inherently agentive (iii) in some cases, an overt middle suffix is in free variation with a zero-marked (covert) alternant.

(i) In most cases, when one of the roots in (46) surfaces without an intransitivizer, as in (47), it has a non-control reading:

(47) a. *c̓əx.c̓x-əm*   = "to be clean" (total reduplication; -*əm* = characteristic)
     b. *š-ɬaʔ*   = "to be close" (*š-* = stative)
     c. *kax*   = "to be dry"

(Note that two of the roots in (47) have undergone aspectual operations —total reduplication in (47a) and stative prefixation in (47b)— which do not affect the control status of the predicate.)

(48) shows the roots in (46-47) with different lexical suffixes; again, these cases have a non-control interpretation.

(48) a. *n-c̓x-áɬca ʔ*   = "laxative" (literally, "clean inside")   (*áɬca ʔ* = "inside")
     b. *n-ɬaʔ-k*   = "to have one's back against something" (*n-...-k* = "back")
     c. *n-kx-ínwas*   = "island" (literally, "dry place inside") (*ínwas* = "inside")

Finally, in (49-50), we see that an intransitivizer is obligatory in other derivations with an agentive reading involving the same roots. The cases in (49) involve lexical suffix plus middle marking, the cases in (50) active and autonomous intransitivizers.

(49) a. *c̓x-álk*(-am̓)*   = "to clean the graveyard"   (lex.suff. -*álk* "surface")

     b. *ɬaʔ-xn*(-ám̓)*   = "to get close to where one is going" (lex.suff. -*xn* "foot")

     c. *n-káx-k*(-am̓)*   = "to dry one's back"   (lex.suff. *n-...-k* "back")

(50) a. *c̓əx *(-xál)*   = "to clean (stuff)"   (active)
     b. *káx *(-xal)*   = "to dry (stuff)"   (active)
     c. *ɬʔ *(-ílx)*   = "to get close to something" (autonomous)

I conclude that the meaning of the root cannot be responsible for the control (agentive) reading of the forms in (46).

(ii) However, it turns out that the lexical suffixes are not the source either, since when attached to other roots, these same suffixes yield a non-control reading, as in (51). A control reading obtains only when a middle marker is also added, as in (52):

(51) a. *kʷə́m-p-əqš*   = "blunt point"   (√*kʷəm* "blunt")
     b. *n-c̓x-áɬca ʔ*   = "laxative"   (√*c̓x* "clean")
     c. *nəqʷ-álč*   = "warm in the house" (√*nəqʷ* "warm")

(52) a. *níš-qš-am*   = "blow one's nose"   (√*niš* "?")
     b. *n-c̓x-áɬč ʔ-am̓*   = "to take a laxative" (√*c̓x* "clean")
     c. *palʔ-álč-əm*   = "to visit people"   (√*palʔ* "one")

(iii) If neither the root nor the lexical suffix is responsible for the control reading of the examples in (46), then the only remaining logical possibility is that there is some other (phonologically null) element contributing agentive force. There is direct evidence for the existence of such an element: the middle suffix is optionally available (without change of meaning) on many lexically suffixed predicates with an agentive reading:

(53)   a. √*pax̱*   = "to shave, peel"
          -*al̓qʷ*   = lex. suff. "log, long object"
          páx̱-al̓qʷ(-əm)   = "to shave a log"

       b. √*ɬuq̓ʷ*   = "to take off"
          -*usá?*   = lex. suff. "fruit, round object"
          ɬu.ɬq̓ʷ-usá?(-əm)   = "to peel fruit"

       c. √*?áma*   = "good"
          -*alt*   = lex. suff. "child, human being")
          ?amh-ált(-əm)   = "to fancy someone as a parent for one's children"

This alternation is easily explained if we assume the existence of a zero-allomorph of the middle intransitivizer. In that case, "intransitivizing" lexical suffixes are simply morphophonological variants of the productive combination of lexical suffix plus middle intransitivizer. As we shall see in section 7, this possibility provides us with a more wide-reaching explanation for the distribution of unsuffixed control intransitives.

6. On the status of derived intransitives

We have yet to address the issue of whether derived intransitives are syntactically or lexically derived. If syntactically derived, the predicate will be detransitivized in the sense that the suppressed internal argument will be syntactically active, i.e. the predicate will remain syntactically transitive. If lexically derived, the predicate will be *intransitive* in the sense that the suppressed argument will be syntactically inert. The next two sections will examine first active and then medio-reflexive derived intransitives, with the aim of establishing that both are *intransitive*, i.e they are lexically derived.

6.1. Active intransitives are not anti-passives

We begin with actives. Many authors, including Gerdts (1988), Kroeber (1991), Thomason and Everett (1993), have claimed that Salish active intransitives are antipassives: in other words, they are detransitivized constructions, involving suppression or absorption of a patient theta role, just as passive involves suppression or absorption of the agent role. Under such an analysis, the availability of an overt object for active-type intransitives follows from their underlying transitivity, just as passive agents are licensed by the underlying transitivity of passivized predicates. In spite of its initial attractiveness, it turns out that there is both morphological and syntactic evidence against an antipassive analysis, and in favour of a lexical treatment of actives.

The most obvious evidence for the lexical analysis is provided by morphology. Unlike passives, which must be based on transitivized stems, active intransitives show no morphological reflexes of transitivity. In fact, they parallel rather than

contain directive transitives, since both are formed by affixation to non-control roots. This is shown in (54):

(54)	Gloss	Unaffixed	Active/ middle	Directive
	"(be) dry"	ƙax	ƙáx-xal	ƙáx-aṅ
	"(be) afraid"	páqʷuʔ	páqʷuʔ-xal	páqʷʔ-an
	"(be) cooked"	q̓ʷəl	q̓ʷə́l-əm~xál	q̓ʷə́l-ən
	"(be) punched"	túp	túp-xal	túp-uṅ
	"(be) seen"	ʔac̓x̲	ʔác̓x̲-əm	ʔác̓x̲-ən

These paradigms are not irregular; while not every root occurs without affixation, the active intransitive/directive transitive alternation is fully productive.

Next, we turn to syntax, concentrating on properties of the object in the *with-object* construction. We have seen that an oblique marker may be present with a passive agent (see 10 above). Under an antipassive analysis, we expect the patient of an active intransitive to behave similarly. This is not the case: an oblique marker is ungrammatical with an overt object:

(55) a. ƙáx-xal   (*ə=/ɬ=)kʷu=ʔúšaʔ
          dry-ACT   (*OBL=)DET=huckleberry
          "S/he dried some huckleberries."

      b. ʔúqʷaʔ   ta=nk̓yáp=a   (*ə=/ɬ=) kʷu=qʷú?
          drink   DET=coyote=EXI   (*OBL=)DET=water
          "The coyote drank some water."

Another difference surfaces with syntactic movement. In general, direct arguments of a predicate (subjects of intransitives, subjects and objects of transitives) may be freely extracted in WH-questions, focus cleft constructions, and relative clauses without inducing any special morphology on the predicate. This is shown in the WH-questions in (56):[14]

(56) a. šwat   kʷu=ʔac̓x̲-ən-číh-aš   b. šwat   kʷu=ʔác̓x̲-ən=axʷ
          who   DET=see-DIR-2SG.OBJ-ERG   who   DET=see-DIR=2SG.CNJ
          "Who saw you?"   "Who did you see?"

The agent of a passivized predicate may be also be extracted:

(57) šwat   kʷu=ʔác̓x̲-ən-əm   š-Bill   ɬ=ta=čítxʷ=a
        who   DET=see-DIR-PAS   NOM2-Bill   OBL=DET=house=EXI
        "Who was Bill seen by in his house?"

In contrast, the object of a derived intransitive may not be freely extracted: it always induces (syntactic) nominalization, as shown in the WH-questions in (58):

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(14) For arguments that direct extraction of both subjects and direct objects in Stʼátʼimcets is possible, see Davis (1994a); for a contrasting viewpoint, see Roberts (1994).

(58)   a.   *štam̓*   *k̓ʷu=š=k̓áx-xal=šu*
            what   DET=*NOM1*=dry-ACT=2SG.POS
            "What did you dry?"

       b.   *štam̓*   *k̓ʷu=š=ʔúqʷaʔ=š*   *ta=nk̓yáp=a*
            what   DET=*NOM1*=drink=3SG.POS   DET=coyote=EXI
            "What did the coyote drink?"

The contrast between (57) and (58) shows us that, unlike passive agents, the objects of active intransitives do not count as direct arguments in the syntax (see Hukari 1994 for similar conclusions on Halkomelem). This provides further evidence against a detransitive ("anti-passive") analysis of derived intransitives, and in favour of an intransitive (lexical) analysis.

6.2. Medio-reflexives are not syntactic reflexives

I now turn to the derivation of medio-reflexive (autonomous-type) intransitives, which I will also claim are lexically derived intransitives.

St'át'imcets has a straightforwardly detransitivizing reflexive morpheme, *-čut*, shown in (59):

(59)   a   *c̓x-uš-an-čut*   *ti=š-yáqč̓=a*   *l=ti=n-k̓ʷan-úš-tən̓=a*
           see-face-*DIR-RFL*   DET=NOM2-woman=EXI   OBL=DET=LOC-look-face-
                                                       thing=EXI
           "The woman looked at herself in the mirror."

       b.   *c̓aw̓-akʔ-ám=wit*   *nił=ƛ̓uʔ*   *š=łuqʷ-un̓-čút =i*
            wash-hand-MID=3PL   then=so   NOM1=undress-*DIR-RFL*=3PL.POS
            "They washed their hands and got undressed."

The presence of the directive transitivizer *(Vn(')* betrays the transitive origin of these forms, while the absence of ergative marking in (59a) and the presence of the third person intransitive plural marker =*wit* and the subordinate third person possessive plural =*i* in (59b) are diagnostic of final intransitivity. *-čut* reflexives, then, are canonically de-transitive.

In marked contrast, autonomous-marked (medio-reflexive) predicates show no signs of underlying transitivity. This can easily be seen with predicates which take both types of reflexive:

(60)   a.   *wə́q̓ʷ=tuʔ=ƛ̓uʔ*   b.   *wəq̓ʷ-ilx=tuʔ=ƛ̓uʔ*
            fall.in.water=CMP=so   fall.in.water-*AUT*=CMP=so
            "He fell in the water."   "He threw himself in the water."

       c.   *wəq̓ʷ-an-čút=tuʔ=ƛ̓uʔ*
            fall.in.water-*DIR-RFL*=CMP=so
            "He threw himself in the water."

(60b), with the autonomous marker *-ləx,* and (60c), with the syntactic reflexive *-čut,* both yield self-directed agentive predicates, as opposed to the non-control reading of the (root) predicate in (60a). However, note that the predicate in (b) is constructed directly from the unaccusative root, while that in (c) is clearly derived from a transitivized form, as evidenced by the presence of the directive transitivizer *-an.*

A further argument for the lexical status of autonomous-marked reflexives is provided by productivity. *-čut* reflexivization is productive: any transitivized predicate may be syntactically reflexivized, subject to semantic plausibility. On the other hand, the medio-reflexive is not fully productive: while there exist many reflexive pairs like (60), there are an even larger number of predicates which simply do not take the autonomous suffix, even when the resulting predicate might appear to be perfectly plausible. This is shown in (61):

(61)   *Syntactic reflexive*   *Medio-reflexive*

     χuqʷ-an-čút   = "to kill oneself, commit suicide"   **χúqʷ-ləx*
     maʔ-ən-čút   = "to blame oneself"   **maʔ-ílx*
     nukʷʔ-an-čút = "to help oneself"   **nukʷʔ-ílx*

I conclude that, like active intransitives, medio-reflexives are lexically rather than syntactically derived. Middles, which by hypothesis are ambiguous between active and autonomous intransitives, are *a fortiori* also lexically derived.

6.3. Control intransitives and event structure

We have now established that neither active intransitives nor medio-reflexives can be derived in the syntax from (directive) transitives. As yet, however, I have provided no clue as to the nature of the lexical process or processes which actually do derive them. In this section, I will show how this can be achieved using the aspectual theory of Davis and Demirdache (1995). (I provide a much-abbreviated version of the theory: see Davis and Demirdache 1995, Demirdache this volume, for more details). It is worth emphasizing that the approach employed here is to a large extent independent of the priciple goal of the paper, which is to establish the derived status of control predicates and the underived status of non-control predicates.

Recall that all roots in St'át'imcets come lexically equipped with a single internal argument. The lexical representation for a root will then be as in (62):

(62)   a. $\sqrt{\overset{2}{kax}}$ "dry" = (dried x)   b. $\sqrt{tup}$ "punch" = (punched x)

Obviously, this argument may find itself realized differently in different syntactic frames: it corresponds to the single argument of stative and inchoative predicates, the agreement-linked object in directive transitive constructions and the unexpressed (unlinked) patient in derived intransitives. We will assume that it cannot be arbitrarily deleted. This is a commonly accepted recoverability constraint on argument structure operations (see e.g. Marantz 1984).

Next, let us make the assumption that roots must be associated with some event structure in order to be realized as predicates. We adopt an aspectual calculus based on the event-structure representations of Pustejovsky (1991); see also Pustejovsky (1995), van Hout (1996). This calculus builds complex events from a set of primitive aspectual substructures, whose terminal elements are *eventualities* (e). The primitive event types include S (a *state* e), T (a *change of state* or simple transition from $\neg$ e to e), and P (a *process*, consisting of a set of identical eventualities e_1 to e_n). The aspectual substructures associated with each of these event types are given below:

(63)   a. S   b.   T   c.   P
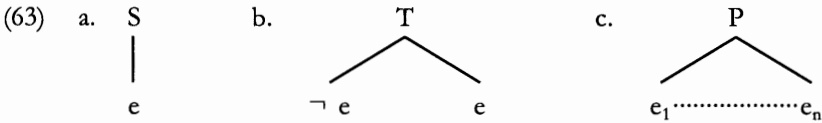
Assume that roots are lexically associated with a single event type. More complex aspectual structures are built recursively by affixation. This means that aspectual affixes (including transitivizers and intransitivizers) are event-type shifters. Thus, suppose the root $\sqrt{k'ax}$ "dry" is lexically associated with S, a state, as in (64a); we can represent the directive, the active intransitive, and the autonomous predicates derived from this root as in (64b-d), respectively:

(64)   a. *Bare predicate*
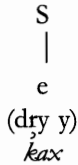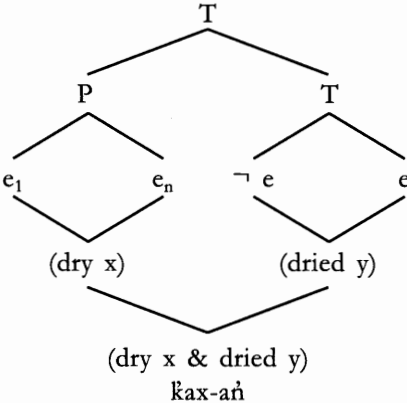
   b. *Directive*   c. *Active*

d. *Autonomous*

(dry x & dried x)
ƙáx-lǝx
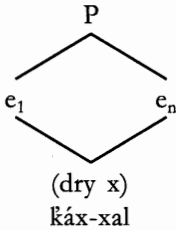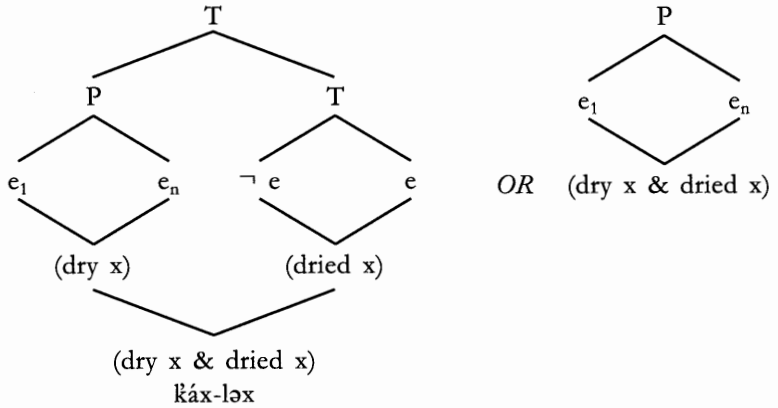
In all three cases, an initial process subevent is added to the event structure lexically associated with the root. It is this subevent which Davis and Demirdache (1995) claim is responsible for agent control; under this conception, the theta role label *agent* is actually a set of entailments of a predicate with respect to a particular (initial process) event-structure representation.[15] While the presence of an initial process renders all three predicates in (64) agentive, the three obviously differ in their treatment of the original (transition) subevent. When the root is affixed with the directive transitivizer (b), the resulting predicate inherits the original transition as its final subevent, yielding a telic predicate. On the other hand, in the active intransitive case (c), the original transition subevent is suppressed;[16] since there is no final subevent, the resulting predicate will be atelic. Note, however, that the original internal argument is undeletable, by hypothesis; it therefore remains aspectually unlinked, but can surface (in the *with-object* construction) as a non-delimiting adjunct predicate. (See de Hoop 1992 for a cross-linguistic analysis of such constructions). Finally, when the autonomous suffix is added, as in (d), a process of lexical reflexivization links the arguments of the two subevents together. The resulting intransitive predicate may be either telic or atelic, depending on whether the final subevent is retained (as in the directive) or suppressed (as in the active). Crucially,

(15) The lexical content of the root is mapped onto the initial process subevent by a process of *predicate cloning*, whose operation is shown formally in (i) for the directive transitivizer:

(i) a. $(\text{dried})^* = \lambda e\, \lambda y\, [\text{dried' } (y,e)]$ c. $\lambda e_1\, \lambda e_2\, \lambda x\, \lambda y\, [\text{dry' } (x,e_1) \,\&\, \text{dried' } (y, e_2)]$
     b. $(\text{DIR})^* = \lambda V\, \lambda e_1\, \lambda e_2\, \lambda x\, \lambda y\, [V\, (x,e_1) \,\&\, V\, (y, e_2)]$
        From (a) and (b), by lambda conversion:

Here e is an event argument, y the internal argument of the predicate "dried", and x the agentive argument introduced by the directive transitivizer *DIR*. V is a variable over predicates. Predicate cloning ensures that the lexical content of the root ("dried") will also be the content of the initial process subevent ("dry"): the resulting predicate will thus be a process of drying by x which causes y to become dried.

(16) I assume for concreteness that the active intransitivizer simultaneously deletes the final transition subevent and adds an initial process; it is quite possible, however, that the operation can be further decomposed into two separate parts.

however, if the final sub-event is suppressed, the unlinked argument does *not* remain.

The most important consequence of this approach is that all agentive (control) predicates (both transitive and intransitive) must be morphologically derived through the mapping of aspectual substructures onto underlyingly unaccusative predicates. In other words, there are no underlyingly agentive predicates. There is straightforward morphological evidence for this conclusion in St'át'imcets, where, as we have seen, overt in/transitivizing affixes are responsible for introducing agents. On the other hand, the same analysis is far harder to motivate in a morphologically opaque language like English, which seems more amenable to an approach where roots are lexically partitioned into transitive, unaccusative and unergative subclasses, without postulating a derivational relationship between them.

In the next section, I show that in fact St'át'imcets also tolerates a degree of (English-type) morphophonological opacity, in the form of a set of control predicates which show no overt derivational morphology. I argue that in spite of appearances, these "control roots" are derived. I will then point out that exactly the same mechanisms employed to account for opacity in St'át'imcets (essentially, zero morphology) are independently available in English (see Pesetsky 1995, Hale and Keyser this volume). I conclude that the two systems are formally identical; they differ only in the degree of zero morphology employed, an independently known parameter of cross-linguistic variation (Haspelmath 1993).

7. Unsuffixed control intransitives and the concealed middle hypothesis

So far, we have seen that there is a one-to-one correspondance between control and derived status in St'át'imcets: all derived intransitives are control predicates; all control predicates are derived. In the last section, we saw how this generalization could be captured in a theory where agency was entailed by a particular (derived) event structure configuration.

However, the generalization itself is put into doubt by the existence in St'át'imcets (and in all Salish languages) of a set unsuffixed control intransitives, roughly corresponding to the class of unergatives in English (as pointed out for Halkomelem by Gerdts 1991). There are about 75 unsuffixed control intransitives in St'át'imcets, divided into several semantic sub-classes; broadly following the verb classification of Levin (1993), these include predicates involving (a) motion (including inherent direction and manner), (b) communication (including directed communication and manner of communication), (c) perception, (d) transfer of possession, (e) creation or transformation, (f) searching or seeking, (g) social activity/performance, (h) bodily processes. A more or less complete list is given in (65):

(65) (a) *Motion predicates:*

matq	"to walk"	*šaq̓w*	"to fly"
mac̓x	"to dodge"	*nux̱w*	"to gallop"
ʔəx̱íč	"to lie down" (L)	*xiƛ̓-il*	"to kneel down"

naš	"to go"	*xʷúləl*	"to run away"
ʔúxʷal̓	"to go home"	*mim̓x*	"to move house"
kʷúča	"to go down to the shore"	*qayt*	"to get to the summit"
ʔuɫxʷ	"to go inside"	*ʔúl̓.luš*	"to get together, meet"
ʔiʔwaʔ	"to accompany"	*míčaʔq*	"to sit down"
q̓iƛil	"to run"	*šiq̓ʷúta*	"to dance (Indian style)
ẓəq-íl	"to crawl"	*məq̓íl-ən*	"to walk over s.o.'s legs
ɫáq̓ʷut	"to bend over"	*n-š-xim*	"to sneak into a wo-man's house"
šúxʷašt	"to come down a hill"	*qʷəč.áč*	"to leave"
šix	"to move house"	*n-čítəm̓*	"to go in a particular di-rection"
k̓ʷult	"to come down a hill dia-gonally"	*wúq̓ʷil*	"to go downstream in a canoe"
n-ẓánəm	"to go around in circles"	*ʔúmik*	"to go downstream"

(b) *Communication predicates:*

wəʔáw	"to shout"	*xʷú.xʷən̓*	"to sigh"
xʷítən	"to whistle"	*čut*	"to say "
ká.kẓaʔ	"to lie"	*ẓəwín̓*	"to talk to the water"
ptakʷɫ	"to tell a legend"	*ʔínw-at*	"to say what ?"
ʔílal	"to cry"	*q̓á̓ʔxn*	"to holler"
qʷal̓-út	"to speak"	*š-qʷə́.qʷəl̓*	"to tell a story"
ƛ̓ámaš	"to guess"		

(c) *Perception predicates:*

paqʷ	"to have a look"	*qan̓im*	"to hear"
qʷaxt	"to notice"	*ẓáq̓il*	"to peek"
k̓al̓án̓	"to listen"		

(d) *Transfer of possession predicates:*

naq̓ʷ	"to steal"	*ʔaẓ'*	"to buy"
kʷúɫən	"to borrow"	*təxʷp*	"to buy"
xaq̓	"to pay"		

(e) *Predicates of creation and transformation:*

kʷukʷ	"to cook"	*qtaš*	"to pit-cook"
may-t	"to fix"	*ʔílaxʷ*	"to soak salted salmon"

(f) *Seeking and searching predicates:*

ʔúš-tək	"to catch fish with a dipnet"	*ʔíʔw̓əš*	"to fish with a rod"

(g) *Predicates of social activity.*

ʔalkšt	"to work"(U)		šáy'šəx̣'	"to play"
payt	"to fight"(L)		cniqʷ-t	"to fight"(U)
yax̱	"to get dressed"(U)		xʷúza?	"to get dressed"(L)
x̣ám.əm̓	"to rest"		š-ʕá.ʕəx̣'	"to quarrel" (U)

(h) *Bodily process predicates.*

ʔiɬən	"to eat"(U)		ʔúqʷa?	"to drink"
qa?	"to eat"(L)		x̱ʷíc	"to defecate"
ʔə́x̱ən	"to cough something out"		kʷúsa?	"to urinate"
ptíx̱ʷ-ən	"to spit"		ʔəx̱ʷʔún	"to cough"

(Note that a few of these forms are suffixed; however, none of the suffixes are intransitivizers, or have any argument-structure effects).

Clearly, if we accept the non-derived status of these forms at face value, we must acknowledge the existence of agentive (unergative) roots in addition to the non-agentive (unaccusative) roots introduced in section 4 above. On the other hand, if we can show that control "roots" in Salish are actually derived, then we have a potential argument in support of the universally derived status of control predicates, including unergatives.

There are several initial reasons to be suspicious of the primitive status of "control roots" in St'át'imcets. First of all, there is a huge disparity between the relative size of the two root-classes: as already mentioned, there are only around 75 control roots, but upwards of 2.000 non-control roots. Second, while we have seen three suffixes which create control intransitives from non-control roots, there are *no* comparable affixes which convert control roots into non-control derived intransitives: this suggests an asymmetrical derivational relationship between the two classes. Third, most control roots fail to conform to the canonical CVC Salish root-shape. This is shown in Table 7 below:

Table 7

Percentages of root-shapes for all roots (1) and for control roots (2):

	CVC	CVCC	CCVC	CVCVC	RESIDUE
1. all roots	65%	18%	5%	5%	7%
2. control roots	29%	15%	3%	37%	16%

The figures in the top row (1) are taken from van Eijk's (1985) overall estimate of root shapes in St'át'imcets; those in row (2) are based on all the control roots I have been able to identify in St'át'imcets. Notice that the percentage of CVC control roots is less than half of that of the overall CVC percentage; in contrast, the figures

for CVCVC constitute a far larger percentage of control roots than of roots in general. In fact, there is a strong general tendency for control roots to be "bigger" than non-control roots, as is obvious from the larger percentages on the right-hand side of row (2). This is directly connected to another important property of control roots: they contain a very high proportion of frozen affixal material, either in the shape of formatives that no longer have any clear grammatical function, or morphological operations that are used productively with non-control roots but have fused with roots in control cases. Examples of the former type include -il, -aʔ, -ut, -tək and -ən, all of which are simply designated as "formatives" by van Eijk (1985). Examples of the latter include all three main types of reduplication, inchoative suffixation/infixation, and lexical suffixation. In fact, fully 70% of all control roots contain some detectable affixal residue. This accounts for the high proportion of multisyllabic control roots (37%) compared to the overall proportion of multisyllabic roots (5%).

All of these reasons lead us to be suspicious of the underived status of the "roots" in (65). If, on the other hand, unsuffixed control intransitives are actually derived, then their eccentric behaviour is to be expected. Their only exceptional property lies in the morphophonological opacity and/or invisibility of the affixes which derive them.

In the following sections, I give a particular explanation for this opacity: namely, that unsuffixed control intransitives are actually concealed middles. We have already seen (in section 4.4) that middle marking is optional or absent with certain predicates containing lexical suffixes. It is then a short step to the claim that the control intransitives in (65) are also zero-marked middles. I further justify this claim by showing, first of all, that control intransitives display certain properties shared by all overtly derived intransitives. These include (a) incompatibility with certain aspectual markers, notably the inchoative; (b) interpretative differences associated with "out of control" marking; and (c) choice of desiderative suffix. Second, I will show that control intransitives, just like overt middles, may be partitioned into implied-object and medio-reflexive sub-classes, each with a distinctive set of properties, as described in sections 5.1-5.4 above. Finally, I give morphological evidence for the concealed middle hypothesis, based on forms that show alternations between an overt and a zero realization of the middle marker.

7.1. Properties shared by overtly and covertly derived intransitives

(a) Inchoatives. The inchoative marker denotes a non-instantaneous change of state. It attaches only to an aspectually appropriate subset of non-derived roots (i.e., those whose lexical content is compatible with a change-of-state reading; for discussion of the semantic underpinnings of this compatibility, see Haspelmath 1993, Levin and Rappaport-Hovav 1995). Some examples are given in (66). (The inchoative morpheme surfaces as a suffixed -p with 'weak' roots containing schwa, as in (66a), but as an infixed glottal stop with 'strong' roots containing a full vowel, as in (66b)).

(66)   a. *ʕəč-p*   = "to get tied up"   b. *ɣi-ʔ -p*   = "to grow"
          čəš-p   = "to get stretched"   *nu-ʔ -qʷ*   = "to warm up"
          ləs-p   = "to get caved in"   *ʐa-ʔ -x̲ʷ*   = "to melt"

The inchoative is generally incompatible with agent control: where a change of
state is imputed to an agent, either the autonomous suffix or the active intransitive
suffix is used, depending on whether the event is medio-reflexive or implies an
object. This yields contrasts like the following:

(67)   a. *ča-ʔ-ɬ*   = "to cool off"   *čáɬ-ləx*   = "to cool oneself off"
          b. *ɬəʕʷ-p*   = "to bounce"   *ɬəʕʷ-ílx*   = "to jump"
          c. *kəɬ-p*   = "to come off"   *kɬ-ílx*   = "to quit"

(68)   a. *x̲əm̓-p*   = "to dry out"   *x̲əm̓-xál*   = "to dry out (stuff)"
          b. *ʕʷəl-p*   = "to burn"   *ʕʷəl-xál*   = "to burn (stuff)"
          c. *ɣi-ʔ-p*   = "to grow"   *ɣíp-xal*   = "to grow, raise (stuff)"

It follows under the present analysis that if the autonomous and the active
markers are in complementary distribution with the inchoative, so will the middle
marker be, since it either has an implied-object or a medio-reflexive interpretation.
This is indeed the case, as can be seen in (69), where forms with lexical suffixes
either appear with an inchoative marker (in non-control derivations) or a middle
suffix (in control derivations):

(69)   a. *ki-ʔ-l-uš*   = "to get hurt, embarrassed"   (*-uš* = "face")
          kíl-uš-əm   = "to do something shameful"
          b. *n-ləs-p-ána?*   = "to get entombed, caved in on" (*-ana?* = "ear")
          n-ləs-án?-am   = "to entomb someone"
          c. *ʕʷəl-p-álqʷ*   = "logs get burned"   (*-alqʷ* = "log")
          ʕʷəl-álqʷ-əm   = "to burn logs"

Now, under the concealed middle hypothesis, we expect unsuffixed control
intransitives to be also incompatible with inchoative marking. This appears to be
overwhelmingly true; there are only four apparent exceptions, shown in (70):

(70)   a. *wə-ʔ-áw*   "to shout"   b. *təxʷ-p*   "to buy"
          c. *ʔí-ʔ-w̓əš*   "to fish with a rod"   d. *ʔi-ʔ-wa?*   "to accompany"

In fact, these potential counter-examples to the generalization actually confirm it,
since in all four cases the inchoative marker has fused with the root. This can be
demonstrated by transitivizing the roots; whereas in general inchoative marking is
incompatible with the directive and indirective transitivizers, as shown in (71), it
remains present with the roots in (70), as shown in (72).

(71)   a. *ʕʷəl-p*   "to burn"   (inchoative)
          b. *ʕʷəl(*-p-)-ən*   "to burn (something)"   (directive)
          c. *ʕʷəl(*-p-)-xít*   "to burn (something for someone)" (indirective)

(72) a. *wə-ʔ-áw-ən*   "to shout at someone"   (directive)
      b. *təxʷ-p-xít*   "to buy something for someone" (indirective)

(b) Out of control. Next, I will briefly examine the behaviour of the "out-of-control" clitic combination, *ka...a* which is discussed in detail in Demirdache (this volume). The interpretation of *ka...a* depends on the predicate to which it attaches. With non-control intransitives it has a strictly aspectual interpretation, meaning "suddenly, all at once", as shown in (73):

(73) a. *ləp*   *n=š=ka=X̌ál=a*
          suddenly   1SG.POS=NOM=OOC=stop=OOC
          "Suddenly   I stopped (unexpectedly)."

      b. *ka=kʷíš=a*   *ti=kəX̌h=a*
          OOC=fall=OOC   DET=rock=EXI
          "The rock fell."

With active intransitives, on the other hand, it means "to be able to", as illustrated in (74):

(74) a. *ka=ləp̓-xal=ɬkán=a*   b. *ka=tix-xal=ɬkán=a*
          OOC=plant-ACT=1SG.SUB=OOC   OOC=set table-ACT=1SG.SUB=OOC
          "I was able to plant."   "I was able to set the table."

With autonomous-marked predicates, the abilitative interpretation also obtains:

(75) a. *ka=ləʕʷ-ílx=kan=a*   b. *ka=tix-ləx=kán=a*
          OOC=hide-AUT=SG.SUB=OOC   OOC=set-table-AUT=1SG.SUB=OOC
          "I was able to hide."   "I was able to sit at the table."

The prediction of the concealed middle hypothesis is that all middles and all unsuffixed control intransitives will show the abilitative rather than the simple aspectual reading. This prediction is borne out.

(76) *Implied-object middles:*
      ka=ʔácx-əm=ɬkán=a   b. *ka=ləʕʷ-úm=ɬkan=a*
      OOC=see-MID=1SG.SUB=OOC   OOC=hide-MID=1SG.SUB=OOC
      "I was able to see."   "I was able to hide (stuff)."

(77) *Medio-Reflexive middles:*
      ka=šaxʷ-əm=ɬkán=a   b. *ka=xaX̌-əm=ɬkán=a*
      OOC=bathe-MID=1SG.SUB=OOC   OOC=go.uphill-MID=1SG.SUB=OOC
      "I was able to bathe."   "I was able to go uphill."

(78) *Implied-object unsuffixed control intransitives:*
      ka=náq̓ʷ=kan=a   b. *ka=kʷúkʷ=ɬkan=a*
      OOC=steal=1SG.SUB=OOC   OOC=cook=1SG.SUB=OOC
      "I was able to steal."   "I was able to cook."

(79) *Medio-reflexive unsuffixed control intransitives:*

ka=miča?q=kán=a   b. *ka=šux^wašt=kán=a*

OOC=sit.down=1SG.SUB=OOC   OOC=go.downhill=1SG.SUB=OOC

"I was able to sit down."   "I was able to go down hill."

(c) Desideratives. The two desiderative markers *-álmən* and *-álmən* are found only in intransitives and attach outside all other derivational affixes. *-álmən* means "want to", *-álmən* means "almost".[17]

Only *-álmən* is found with overtly derived intransitives, including active (80a), autonomous (80b), and middle (80c-d) predicates:

(80) a. *nas-xal-álmən/ *-álmən*   = "to want to bring things"

     b. *tał-ləx-álmən/ *-álmən*   = "to want to stand up"

     c. *xaƛ-əm-álmən/ *-álmən*   = "to want to go up hill"

     d. *?iƛ-əm-álmən/ *-álmən*   = "to want to sing"

Both desiderative forms are found with unsuffixed intransitives. However, their distribution is not free: control intransitives (of both the implied-object type, as in (81a), and the medio-reflexive type, as in (81b)) select only *-álmən*, whereas non-control intransitives (82) take only *-álmən*.

(81) a. *k^wúk^w-álmən/ *-álmən*   = "to want to cook"

     b. *?ux^wal-álmən/ *-álmən*   = "to want to go home"

(82) a. *čix^w*-álmən/ -álmən*   = "to almost get there"

     b. *čək*-álmən/ -álmən*   = "to be almost all gone"

If the control intransitives in (81) are concealed middles, then they are expected to behave in a parallel fashion to the suffixed intransitives in (80), and to contrast with the non-control intransitives in (82). This is exactly what we find.

7.2. Subtypes of concealed middles

So far, I have established that unsuffixed control intransitives share a number of properties with their suffixed counterparts, in opposition to non-control intransitives. However, it could be argued that these tests simply divide predicates along the semantic dimension of agent control, without in any way establishing the morphologically derived status of the unsuffixed control forms. In this section, I will show that the concealed middle hypothesis makes a further set of predictions which cannot be reduced in this way to the semantics of control, since they are based on a precise morphological parallel between overt and concealed middles. This parallel stems from the fact that overt middles fall into implied-object (active-type) and

(17) The reason that I refer to both these forms as "desiderative" even though the second has completely lost its desiderative force is because both are diachronically related to a single Proto-Salish desiderative morpheme, reflexes of which are attested in many Salish languages, including Halkomelem (Gerdts 1991) and *Nłe?kepmxčín* (Howett 1993).

medio-reflexive (autonomous-type) subclasses, as shown in section 5.3. If unsuffixed control intransitives are zero-marked middles, then they should show the same type of ambivalent behaviour. I show that this is indeed the case.

Recall the diagnostic properties of the active and autonomous intransitivizers, summarized in Table 5, which is repeated below:

Table 5

Diagnostic properties of active and autonomous intransitivizers

	interpretation	allow overt-object	aspect	s-prefixation	allow lexical suffix
active (*-xal*)	implied object	yes	atelic	nominal	yes
autonomous (*-ləx*)	medio-reflexive	no	undefined	stative/*	no

The prediction is that we should be able to distinguish between active-type and autonomous-type unsuffixed control intransitives on the basis of the criteria above, just as we can distinguish between active and autonomous middles.[18] Let us turn to the active subtype first. The first diagnostic property of actives is their ability to participate in the *with-object* construction. The following control intransitives from the list in (65) may take an overt object DP:

(83) *With-object unsuffixed intransitives:*

    a. ʔiʔwaʔ   "to accompany"

    b. čut   "to say "   wəʔáw   "to shout"

       ptakʷɬ   "to tell a legend"   ʔinw-at   "to say what?"

       qáʔxn   "to holler"   ƛámaš   "to guess"

       qʷal-út   "to speak"   š-qʷə́.qʷəl   "to tell a story"

    c. paqʷ   "to have a look"   ẑáqil   "to peek"

       qaním   "to hear"   kaláň   "to listen"

       qʷax̱t   "to notice"

    d. naqʷ   "to steal"   kʷúɬən   "to borrow"

       ʔaẑ'   "to buy"   təxʷp   "to buy"

       x̱aq   "to pay"

    e. kʷukʷ   "to cook (things)"   may-t   "to fix, build, create"

       ʔilax̱ʷ   "to soak (things)"   qtaš   "to pit-cook"

    f. ʔiʔw̓əš   "to fish with a rod"   ʔúš-tək   "to catch fish with a dipnet"

    g. šáy'šəẑ'   "to play"   cniqʷ-t/payɬ'   to fight"(U/L)

(18) The third possible type of control intransitive, which is equivalent to predicates with a lexical suffix plus a zero middle marker (see section 4.4), yields a medio-reflexive interpretation parallel to that of autonomous-type intransitives; for the purposes of the present discussion, we will treat it as a subtype of the autonomous-type middle.

  h. *ʔíɬən/q̓aʔ* "to eat"(U/L)   *ʔúqʷaʔ*   "to drink"

    ptíx̣ʷ-ən "to spit"   *kʷúsaʔ*   "to urinate"

    x̱ʷíc̓   "to defecate"   *ʔə́x̣ən*   "to cough something out"

Examples are given below (with the unlicensed object in italics):

(84) a. *ʔúqʷaʔ*   *ta=nk̓yáp=a*   *ta=qʷúʔ=a*

     drink   DET=coyote=EXI   *DET =water=EXI*

     "The coyote drank the water."

  b. *ʔácx̣-ən-túmuɬ=kan*   *ʔi=wáʔ=alap*   *šáy'šəx̣' kʷu=bingo*

     see-DIR-2PL.OBJ=1SG.SUB   when (PAST)=PRG=2PL.CNJ   play   *DET=bingo*

     "I saw you guys when you were playing bingo."

  c. *níɬ=kʷuʔ=ƛ̓uʔ*   *š=čut=š*   *ʔi =ʔuxʷalmíxʷ=a:*

     then=QUO=so   NOM1=say=3SG.POS   *PL.DET=person=EXI*

     "So he told the people..."   (van Eijk & Williams 1981: 45)

There is a correspondance between the various semantic subclasses of control intransitive and their ability to take an overt object. Subclass (a) (motion) predicates are generally incompatible with an object —as we would expect if these predicates are basically medio-reflexive. (The one exception is *ʔíʔwaʔ* "to accompany".) On the other hand, subclasses (c-h), comprising perception predicates, predicates of transfer, creation or transformation, searching/seeking, social activity, and bodily process, are all compatible with an object.

  We next turn to a related property of active intransitives: the nominal interpretation associated with š-prefixation (see section 5.1 above). Given the concealed middle hypothesis, we expect the control intransitives which take an overt object to yield a nominal interpretation under š-prefixation. This is indeed the case, as shown by the examples in (85):

(85) *š-čut*   = "something said"   (NOT "saying")

    š-kʷukʷ   = "something cooked"   (NOT "cooked")

    š-naq̓ʷ   = "something stolen"   (NOT "stolen")

On the other hand, control intransitives which do not take an object yield either a stative interpretation or are ungrammatical with š-prefixation, again as expected:

(86) *š-mičaʔq*   = "sitting"   **š-ʔúx̱ʷal*   = "(going) home"

    š-ʔuɬxʷ   = "(being) inside"   **š-matq*   = "walking"

Finally, recall that active intransitives, unlike autonomous intransitives, are possible with a lexical suffix. This predicts that implied-object but not medio-

reflexive control intransitives should co-occur with a lexical suffix. This prediction is also borne out; out of the predicates in (65), the following take a lexical suffix, and all are implied-object predicates:

(87) qaním   = "to hear"   qaním-xən   = "to hear footsteps"
      kaláń   = "to listen"   n-kaláń-ač   = "to listen without speaking"
      naq̓ʷ   = "to steal"   náq̓ʷ-awɬ   = "to steal a ride"
      kʷúɬən   = "to borrow"   kʷuɬən-íńak   = "to borrow a gun"
      ʔaẑ̓   = "to buy"   ʔaẑ̓-q   = "to buy shoes"
      təxʷp   = "to buy"   təxʷp-alíca?   = "to buy clothes"
      x̲aq̓   = "to pay"   x̲aq̓-awíɬ   = "to pay for transport"
      čut   = "to say "   čut-ánwaš   = "to think, feel"
      may-t   = "to build"   máy-š-alč   = "to build a house"
      čniqʷ-t   = "to fight" (U) čniqʷt-č(-aṁ)   = "to quarrel, bicker"

Putting together the evidence we have examined from the various diagnostics for classifying derived intransitives, we can now identify the following control intransitives as "active-type" (implied-object) concealed middles:

(88) wəʔáw   "to shout"   čut   "to say "
      qʷal-út   "to speak"   ká.kza?   "to lie"
      λ̓ámaš   "to guess"   paqʷ   "to have a look"
      x̲áq̓il   "to peek"   qaním   "to hear"
      kaláń   "to listen"   naq̓ʷ   "to steal"
      kʷúɬən   "to borrow"   ʔaẑ̓   "to buy"
      təxʷp   "to buy"   x̲aq̓   "to buy"
      kʷukʷ   "to cook" (things)   ʔílaxʷ   "to soak" (things)
      may-t   "to fix, build, create" šáy'šəẑ̓ "to play"
      čniqʷ-t   "to fight, argue"(U)   payt   "to fight"(L)
      ʔiʔw̓əš   "to fish with a rod"   ʔúš-tək   "to catch fish with a dipnet"
      ʔiɬən/q̓a?   "to eat"(U/L)   ʔúqʷa?   "to drink"
      ptíxʷ-ən   "to spit"   kʷúsa?   "to urinate"
      ʔəx̲ən   "to cough something out" ʔiʔwa? "to accompany"

Conversely, the following control intransitives have a medio-reflexive interpretation:

(89) matq   "to walk"   šaq̓ʷ   "to fly"
      mac̓x   "to dodge"   nux̲ʷ   "to gallop"
      ʔəx̲íč   "to lie down" (L)   xiλ-il   "to kneel down"
      naš   "to go"   xʷúləl   "to run away"
      ʔúx̲ʷaí   "to go home"   mimx   "to move house"
      kʷúča   "to go down to the shore" qayt   "to get to the summit"
      ʔuɬxʷ   "to go inside"   ʔúl.luš   "to get together, meet"

mícaʔq	"to sit down"	q̓íɬil	"to run"
šíq̓ʷúta	"to dance (Indian style)	ʒəq-íl	"to crawl"
ɬáq̓ʷut	"to bend over"	məq̓íl-ən	"to walk over s.o.'s legs
qʷəč.áč	"to leave"	n-š-xím	"to sneak into a woman's house"
šúx̣ʷašt	"to come down a hill"	ʔúmik	"to go downstream"
šíx̣	"to move house"	n-čítəm	"to go in a particular direction"
k̓ʷult	"to come down a hill diagonally	wúq̓ʷil	"to go downstream in a canoe"
n-ẓánəm	"to go around in circles"	ʒám̓əm̓	"to rest"
ʔalkšt	"to work"(U)	ʔílal	"to cry"
yax̣	"to get dressed"(U)	xʷúẓaʔ	"to get dressed"(L)
ʔəx̣ʷʔún	"to cough"	š-ʕá.ʕəʒ'	"to quarrel" (U)
xʷú.xʷən̓	"to sigh"		

As pointed out in footnote (18), (89) contains two subtypes: those which are equivalent to autonomous-marked predicates, and those which are equivalent to predicates containing a lexical suffix plus the middle marker. It is not easy to differentiate these cases, since they yield similar interpretations; however, three of the forms above appear to contain frozen variants of lexical suffixes, indicating that they are of the latter type:

(90)	mat-q	"to walk"	(lex.suff. = -q-, "behind, bottom")
	mícaʔ-q	"to sit down"	(lex.suff. = -q-, "behind, bottom")
	ʔal-kšt	"to work" (U)	(lex.suff. = -kšt-, "hand")

Further evidence for the concealed middle hypothesis is provided by three types of morphological alternation. First there are a few predicates where a suffixed form is in free variation with a functionally and formally identical unsuffixed form. Examples are given below:

(91)	a. q̓ʷum	~	q̓ʷúm-ləx	"to shrivel"
	b. q̓iƛ̓	~	q̓íƛ̓-ləx	"to heal"
	c. ʔúl.l̓uš	~	ʔul.l̓uš-ílx	"to gather, meet"
	d. ʔúmik	~	ʔumík-əm	"to go upstream"

Second, there are cases which involve synonymy or near-synonymy between two separate roots, which have different affixation possibilities. Some of these cases arise from dialect variation as in (92b, c); others occur in both dialects:

		Suffixed form:		Unsuffixed form
(92)	a.	c̓áqʷ-xal	"to eat "(intr.)	ʔíɬən/ q̓aʔ "to eat "(intr.) (U/L)[19]

(19) Van Eijk (1987) notes that "The consultants from whom I recorded c̓áqʷ-xal translate it as "to eat some of it." By contrast, q̓aʔ and ʔíɬən are activity-oriented and refer exclusively to the action of eating." In spite of this meaning difference, however, both commonly take a with-object and otherwise behave alike syntactically. I will therefore assume here that the difference is not related to argument structure.

b.	*k̓ʷẓ-úš-əm*	"to work" (L)	*ʔálkšt*	"to work" (U)
c.	*kíč-ləx*	"to lie down" (U)	*ʔax̣ič*	"to lie down" (L)
d.	*x̣áw-ləx*	"to go around" (intr.)	*n-x̣ánəm*	"to go around" (intr.)
e.	*ʕaw̓-ílx*	"to gather, meet"	*ʔúl.lus̓*	"to gather, meet"
f.	*mát-aml/-ləx*	"to rest"	*x̣ám.əm̓*	"to rest"

A third morphological indication that middles and unsuffixed control intransitives are closely related involves cases where middle forms are reanalyzed as unsuffixed; in other words, the *-Vm(')* ending becomes part of the root. This tendency is responsible for the idiosyncratic (non-compositional) meanings of the middle in (93) below, and for cases where other suffixes which are normally in complementary distribution with the middle end up suffixed to it instead, as shown in (94):

(93) a. *xaƛ̓*   "difficult (task); to have difficulty (person)"
       b. *xáƛ̓-əm*   "to go up hill"

(94) a. *ʔíƛ̓-əm*   "to sing"
       b. *ʔíƛ̓-xit* ~ *ʔíƛ̓əm-xit*   "to sing for someone"

The forms in (94) are particularly interesting, in that they show an intermediate stage of reanalysis. The applicative transitivizer *-xit* is normally in complementary distribution with all intransitivizers; the two forms in (94b) are consistent with this generalization, if the root is construed as optionally including the (reanalyzed) middle suffix.

All this evidence points in one direction: control intransitives are zero-marked middles.

8. Implications

I have now provided considerable evidence from St'át'imcets for the principle claims of this paper, repeated below:

(I) All predicates are based on roots which are lexically associated with a single, internal argument.

(II) All transitive and all unergative predicates are derived by morphosyntactic operations, which may be phonologically null.

In this final section I address the implications of this analysis in more general terms, concentrating on two issues; first, the status of zero morphology; second, potential explanations for why languages should consistently display a near-identical set of zero-derived intransitives (e.g., "control roots", "unergatives").

8.1. Zero morphology

Under the analysis proposed here, non-control roots are uniformly unaccusative; moreover, they are the only type of non-derived predicate in St'át'imcets, and by

hypothesis, universally. This implications for lexical representation: to put it simply, aside from categorial status (N vs. V) there is no need to specify argument structure at all.

There is considerable conceptual advantage to a model of the lexicon which minimizes the role of idiosyncratic information in individual lexical entries. Nevertheless, it might be objected that the one presented here simply shifts the burden of idiosyncracy onto the morphological component, and more particularly onto the role of zero morphology. Clearly, if zero-derivation is unconstrained, then such criticisms are well-founded, since an invisible morpheme can be conjured up every time overt evidence is lacking for a desired derivation. The situation, indeed, is much the same as in syntax, where empty categories must be constrained if their use is not to lead to vacuity.

One important constraint on zero-derivation has become known as *Myers' Generalization* (Myers 1984):

(95)   *Zero-derived words do not permit the affixation of further derivational morphemes.*

Pesetsky (1995) uses Myers' Generalization to account for, amongst other phenomena, the lack of 'causative' nominalizations with psych-predicates like 'annoy' or 'amuse'. According to his analysis, these are complex forms consising of bound roots affixed with a zero causative morpheme. Thus, 'annoyance' means 'the state of being annoyed' not 'the activity of annoying', 'amusement' means 'the state of being amused', not 'the activity of amusing' and so on. This follows if the nominalizations may only be based on the underlying non-causative bound roots √*annoy,* √*amuse,* rather than their zero-derived causative counterparts 'cause to be annoyed', cause to be amused'.

Myers' generalization, however, is counter-exemplified by nominalization in St'át'imcets. Recall the distinction between š-prefixed implied-object and unaccusative predicates (the former derived by zero middle-marking):

(96)   Implied object   Unaccusative
       š-čut   = "something said"   š-məč   = "written"
       š-kʷukʷ   = "something cooked"   š-puɬ   = "boiled"
       š-naq̓ʷ   = "something stolen"   š-tix   = "set (of table)"
       š-ʔúqʷaʔ   = "something drunk"   š-čəq   = "put down (with opening up)"

š-prefixation of the implied object predicates on the left yields a nominal interpretation, in contrast to the resulting state interpretation of the unaccusative predicates on the right. However, by hypothesis, both sets of predicate are based on unaccusative roots; the difference is that the implied object predicates contain a Ø middle marker, which must be present prior to š-prefixation in order to yield the difference in interpretation. Since the nominalizing š-prefix is clearly derivational (amongst other things, it is category-changing), Myers' generalization as a general restriction on zero-derivation must be false.

However, a relativized version of the generalization (due to Pesetsky 1995, building on work by Fabb 1988) does not run into these problems. Pesetsky terms his version *Morphological Opacity*:

(97) a. *A suffix* β *may attach to a form headed by a suffix* α *only if* α *is* opaque *to* β.
      b. *Suffix* α *is* opaque *to suffix* β *iff* α *satisfies the* opacity index *of* β.
      c. *The* opacity index *of a morpheme b is:*

      i. *an identifying mark or variable over identifying marks (e.g [+latinate] or a*
         wildcard [*])
      ii. *a syntactic feature (e.g. N, V, A)*

The basic idea behind this approach is that, in general, derivational affixes resist attaching to derived forms, but this resistance can be overcome when certain (α) affixes are supplied with features ("opacity indexes") which allow them to conceal their derivational history from certain other (β) affixes. Forms affixed with α will then act as non-derived for the purposes of affixation by β. Opacity indexes are of two types: (i) contains morphophonological features, whilst (ii) contains syntactic features. Importantly, Ø-derivational affixes are *never* treated as having a type (i) opacity index (logically enough, since they are by definition morphophonologically empty) but they may have a type (ii) index.

Now, notice that the nominalizing š-prefix in St'át'imcets is category-changing (by definition). This means that the zero-middle marker to which it attaches must have an identifying categorial feature: [+V], to be precise. But then, this feature can serve as a type (ii) opacity index, and we expect the middle-marker to be morphologically opaque —which it is, since further affixation (š-prefixation) is permitted.

Next, compare nominalizing š-prefixation to stative š-prefixation, illustrated with non-derived (unaccusative) roots on the right-hand side of (96). Unlike the nominalizer, the stative prefix makes no reference to the category of the root to which it attaches. By hypothesis, then, it cannot refer to a type (ii) opacity index. This means that the zero middle-marker is not opaque to the stative prefix, which means that it should resist stative š-prefixation. This is indeed the case: the š-prefixed unergatives (i.e., zero-derived middles) on the left of (96) have only a nominalized and not a resulting state interpretation.[20]

Stepping back from Pesetsky's specific proposal, we can begin to see the outlines of a general theory of zero-morphology. Zero-morphemes differ from overt morphemes in that while the latter may be licensed by either morphophonological or syntactic features, zero-morphology must be licensed by syntactic features. There is an obvious link between the behaviour of zero-derivation as outlined here and commonly proposed constraints on zero-inflection. Zero-inflection is usually proposed when syntactic considerations force its existence: these considerations include systematic gaps in φ-feature specifications, as in person and number paradigms, as well as universal conditions on the realization of functional morphemes

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(20) A problem for this analysis is the existence of medio-reflexive zero-marked middles which do permit stative š-prefixation, contrary to the predictions of Morphological Opacity. Examples are given in (i):

    (i) *šmičaʔq*   = "sitting"   *šʔəxič*   = "lying down" (L)

    I offer no solution to this problem, except to note that the predicates which show this behaviour all have locative semantics. Locatives in St'át'imcets have a number of properties which suggest they merit a more extensive investigation, but one which is beyond the scope of this paper.

such as tense, mood, and aspect (Déchaine 1993). In all of these cases, zero-inflection is licensed by syntactic features, just as Pesetsky has proposed for zero-derivation. An important question remains as to exactly which syntactic features are relevant for different levels of the grammar: in a model such as that of Hale and Keyser (1993, this volume), for example, only (lexical) categorial features are available in the derivational component (l-syntax) while functional heads and ϕ-features are introduced in the inflectional component (s-syntax). Whether this division can be maintained remains an open question.

8.2. Lexicalization and the unaccusative-unergative distinction

Finally, let us return once again to the distinction between 'non-control' and 'control' roots. I have argued at length that control roots do not really exist; contrary to appearances, they are zero-derived versions of overtly suffixed intransitives. I have, however, left unanswered the question as to why a particular, relatively small set (about 75) of intransitive predicates should be zero-derived, and not a random subset of roots. Moreover, why should the same 75 intransitives get zero-derived more generally across the Salish family? And why should these 75 in large part overlap with the class of unergative predicates identified cross-linguistically?

The answer lies in the process of lexicalization whereby a particular morphosyntactic substructure receives a separate morphophonological shape.[21] Clearly, not all forms made available by the morphosyntax are realized phonologically. Roots may be bound, for example, which is another way of saying that they cannot be associated with an independent phonetic matrix. The same is true —by definition— for affixes. A particular pattern of association and non-association between the morphosyntax and the morphophonology is what of course defines the lexicon of a given language.

Now, let us assume that lexicalization is sensitive not only to morphological structure, but also to patterns of language use, that is, real-world knowledge and pragmatic utility. Outputs of the morphosyntactic component will get an independent morphophonological shape only if they are of 'communicative value', through frequency of usage and/or cognitive saliency. I have kept these notions deliberately vague, in order to allow a certain degree of cross-linguistic variation, since languages may differ as to which morphosyntactic representations they choose to lexicalize. For example, it is hard for English speakers to conceive of unaccusative versions of predicates like "punch", or "cut someone's throat". Yet they do surface in St'át'imcets:

(97) √ḱətxʷ = "(get) severed"   ḱətxʷ-úš = "to get one's throat cut"
      √tup   = "(get) punched"   túp-uš   = "to get punched in the face"
      √šək   = "(get) whipped"   n-šək-q = "to get whipped on the behind"

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(21) I take no position here as to exactly which model of the morphosyntax-morphophonology mapping to adopt. In fact, it seems to me that to allow non-linguistic real-world information to influence the mapping will significantly weaken whatever model we choose; this is why I view lexicalization patterns as epiphenomena, derived from the process of language acquisition rather than formal properties of the grammar.

Cross-linguistic variation in lexicalization is a real and inescapable source of difference between languages, and may even reflect culturally different ways of conceiving the world. However, and quite crucially, lexicalization does not vary without limit. On the contrary, languages tend to consistently lexicalize more-or-less the same (useful) types of predicate.

Now, one of the most salient properties of zero-derived (control) intransitive predicates is that they are semantically asymmetrical, in that they involve actions in which the focal (human) participant is far more likely to be construed as agent than as patient. This is true of implied object as well as medio-reflexive zero-derived intransitives. Implied object intransitives, while derived aspectually by "a-telicizing" a predicate (see section 6.3) are often used to defocalize an underlying object, and focalize the predicate itself; 'eat' and 'drink' are typical members of this class. Medio-reflexive zero-intransitives have a similar defocalizing effect, but this time by forcing an inclusion or identity relation between subject and underlying object, typically yielding body-centred activities such as 'bathe' or 'dress'. In both cases, there is a clear asymmetry between agent, the focalized participant, and patient, the defocalized participant.

Now, under a conception of morphosyntax such as that advocated here, both classes of unsuffixed control intransitive must be derived; and since they are derived directly from roots, Morphological Opacity will not stop them from being zero-derived. It follows that the only possible class of zero-derived intransitives will be 'control roots' (i.e., zero-derived unergatives). Conversely, the unaccusative roots which underly them will not be lexicalized (i.e. will surface only when bound), because their (non-agentive, non-focal) argument will find few or no real world contexts of use.

It should be emphasized that the notion of semantic asymmetry appealed to here is a continuum. At one end are the control predicates, where the focal participant is strongly agentive; these are most likely to be lexicalized as zero-derived unergative intransitives. At the other, we find non-control predicates where the participant is devoid of any agency at all; these are most likely to surface as bare roots. In the middle, however, we find predicates which are more or less symmetric, in that neither agent-orientation nor patient-orientation is favoured by the inherent lexical properties of the root. It is these predicates which typically show alternations between unsuffixed unaccusatives and suffixed unergatives.

Finally, it is worth pointing out that the existence of the class of control intransitives in particular, and patterns of lexicalization more generally, are better conceived of as by-products of the process of language acquisition than as formal properties of the grammar. Children go through a period of rote-learning prior to abstracting morphological regularities from their linguistic input, and they are liable to learn the most common predicates which they encounter. Moreover, it has often been noted that unergative (control) predicates are (i) salient (ii) few in number and (iii) frequently employed —precisely the types of predicate, in fact, which are liable to be rote-learnt before the productive rules of morphology are fully acquired. We might think, then, of unergatives as constituting part of a core of "relic" forms acquired early in childhood and resistant to morphophonological reanalysis. (In fact, we have already observed that unsuffixed control intransitives in St'át'imcets are

characterized by an unusual preponderance of fossilized derivational material; we can now posit a source for this phenomenon in language acquisition.)

Now, what happens when the child's morphological component is reorganized so that —in conformity with universal properties of lexical composition— all control predicates are derived? As fossilized rote-learned forms, control intransitives resist morphophonological reanalysis: but they are by no means resistant to zero-derivation, which allows them to retain their morphophonological integrity while adding the requisite syntactic features. The logical result of this developmental step is the creation of a set of zero-derived agentive predicates —in other words, control intransitives or unergatives.

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'OUT OF CONTROL' IN SALISH AND EVENT (DE)COMPOSITION*

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1. Introduction

Hovav & Levin (1995) distinguish between morphological operations which affect the argument structure of verbs and morphological operations which affect the lexical representation of verb meanings. Morphological operations which affect lexical meanings either alter the aspectual template associated with a predicate or the pairing of names with aspectual templates. I argue that what is known as *out of control* in the Salishan literature provides crucial evidence for the existence of morphological operations which affect lexical verb meanings by either altering the aspectual template associated with a verb or the pairing of a name with an aspectual template.

I first examine the restrictions that out of control morphology in St'át'imcets[1] (Lillooet Salish, henceforth ST') imposes on the interpretation of the predicate to which it affixes. When the out of control morpheme *ka...a* is affixed to either an unergative or a transitive verb, it suppresses the control of the agent over the action denoted by the verb, yielding either of two readings. When the verb denotes an activity, it yields an "able to" reading (e.g. *I am able to work*); when the verb has a causative meaning, it yields an accidental reading (e.g. *I accidentally hit him*). Under the scope of certain operators (such as the progressive or negation), this accidental reading is lost and the ability reading obtains (e.g. *I can't hit him*).

(1) St'át'imcets is a Northern Interior Salish Language spoken in southwest mainland BC, with two dialects: the Mount Currie dialect and the Upper dialect spoken near Sat' (Lillooet).

Examples are presented in van Eijk's orthography (see Appendix for key). Abbreviations used: 1 = 1st person, 3 = 3rd person, SG = singular, PL = plural, COLL = collective, POSS = possessive, SUB = subject, DET = determiner, ABS = absolute, ERG = ergative, INC = inchoative, STA = stative, CAU = causative, DIR = directive, OOC = out of control, MDL = middle, ACT = active intransitivizer, NOM = nominalizer, PROG = progressive, NEG = negation, MOD = modal, CON = connective.

Crucially, out of control morphology also applies freely to unaccusative predicates, yielding a suddenly/accidental reading (e.g. *I got hit suddenly/ accidentally*). Under the scope of certain operators (such as the progressive or negation), this reading is lost and the ability/capacity reading surfaces (e.g. *I couldn't get hit*).

I argue that the range of readings that out of control yields in ST' can uniformly be derived from two proposals. First, unaccusatives and causatives share the same underlying semantic representation as argued by Chierchia (1989) and Pustejovsky (1995) among others. Second, out of control is the equivalent of a passive defined on the lexical semantic representation of a predicate.

The analysis developed here is based on the generative model of lexical representation proposed by Pustejovsky (1989, 1991, 1995). Within a model where the aspectual properties of verbs —and ultimately sentences— are configurationally and compositionally defined in terms of recursive event structures, out of control can be defined as the equivalent of a passive on the lexical meaning of a predicate.

Hovav & Levin define passive as an operation that affects the number of arguments that a predicate has without affecting its lexical meaning. Conversely, I define out of control as an operation that affects the lexical meaning of a predicate without affecting the number of arguments it has. Whereas passive suppresses an external argument position (or the agent role in the thematic grid of the verb), out of control in ST' suppresses either the initial subevent in the event structure of a predicate, or the name (the constant) that is associated with this subevent. That out of control yields *precisely* either an ability reading, an accidental reading or a suddenly (spontaneous occurrence) reading follows from this hypothesis.

The assumption that causatives and unaccusatives share the same underlying semantic structure will explain why a morphological operation that suppresses agent control and also productively applies to unaccusatives, *should or could exist in the first place*. It further explains why out of control yields an accidental reading with *both* causatives and unaccusatives but an ability reading with unergatives. Finally, it explains the "spontaneous occurrence, suddenly, all at once" reading that out of control applied to an unaccusative yields. If the analysis proposed here is correct, then out of control provides very strong evidence for the claim that unaccusatives have *underlyingly causative semantics,* as proposed in Chierchia (1989), Levin & Hovav (1995) Pustejovsky (1995) and Reinhart (1991) among others. This result is all the more surprising in a language where unaccusatives are morphologically 'primitive' —that is, in a language where all transitives and unergatives are morphologically derived— as demonstrated by Davis (this volume) (see also Hale & Keyser, this volume, for related discussion).

2. Agent Control

In this first section, I briefly present two important aspects of the morpho-syntax of Salish languages. We will first see that transitive and unergative predications are morphologically derived in ST', as established by Davis (this volume). I then turn to a phenomenon know as Control in the Salishan literature (Thompson 1976, 1985). We will see that morphology on the predicate in ST' can

mark the degree of control of the agent over the action denoted by the verb: an agent can be either in *full* control or *out* of control. The problem of control is further compounded by the fact that so called out of control morphology can be applied to an unaccusative predicate yielding basically the same range of meanings as out of control applied to a predicate with a causative meaning.

2.1. Internal arguments

As Davis (this volume) demonstrates, Salish languages exhibit a fundamental asymmetry between internal and external arguments. Internal arguments are entailed by the meaning of the root, as illustrated below with examples from ST'. A bare root such as √k'ac 'dry' or √sec 'hit' in (1) is invariably interpreted as an unaccusative predicate: it selects an internal argument.

(1) (a) √k'ác   ti   s-ts'wán-a
         dry   DET   NOM-salmon-DET
         'The salmon dried' or 'The salmon is dry'
     (b) √k'ác   ti   sqáycw-a
         dry   DET   man-DET
         'The man (got) dried' or 'The man is dry'
     (c) √sék   ti   sqáycw-a
         hit   DET   man-DET
         'The man was hit (with a stick or a whip)'
     (d) *√k'ác   ti   sqáycw-a   ti   s-ts'wán-a
         dry   DET   man-DET   DET   salmon-DET
         'The man dried the salmon'

The ungrammaticality of (1d) demonstrates that a bare (unsuffixed) root in ST' is intransitive: it licenses a single argument. (1a-c) demonstrate that a bare root in ST' is unaccusative: the single argument of that a bare root licenses is an *internal* argument. For instance, the sole argument of either √k'ac 'dry' in (1b) or √sék 'hit' in (1c) cannot be interpreted as an agent but only as a patient or theme.

2.2. External arguments

All unergative and transitive predicates are derived via morphosyntactic operations; see Davis (this volume) for an extensive discussion. Unergative predicates are derived by suffixation of an "intransitivizer" to the root. In (2a-c), we see that suffixation of either the active intransitivizer (ACT) -cal or the middle (MDL) -Vm(') derives an unergative predicate denoting an activity. I refer to predicates suffixed with either -cal or -Vm('), as derived unergatives.

(2) *Derived ACTive Unergatives*
     (b) [√k'ác - cal] ti   sqáycw-a   (b) [√sek - cál] ti   sqáycw-a
         dry   ACT   DET   man-DET   hit   ACT   DET   man-DET
         'The man dries (stuff)'   'The man hits (people)'

Derived MiDdLe *Unergatives*				(3) *Zero Unergatives*		
(c)	[√píx - em']	ti	sqáycw-a	√álkst	ti	sqáycw-a
	hunt MDL	DET	man-DET	work	DET	man-DET
	'The man is hunts'			'The man is works'		

There is, however, a small set of bare roots that are interpreted as unergative predicates (roughly 75 roots out of 2000), as illustrated in (3). Thus, whereas the unsuffixed root √*sek* 'hit with a stick or a whip' selects an internal argument (as was illustrated in (1c)), the unsuffixed root √*alkst* 'work' in (3) selects an external argument. Note that the set of unsuffixed unergatives corresponds roughly to the set of unergatives in English (e.g. √*matq* 'walk', √*n'as* 'go' or √*q'ilhil* 'run' —see Davis (this volume) for an exhaustive list). Davis demonstrates that these unsuffixed unergative roots are in fact concealed (lexicalized) middles and as such do not invalidate the generalization that bare roots in ST' are unaccusative. He then concludes that unergative predicates are uniformly derived from bare roots by suffixation of either an overt intransitivizer as is the case in (2) or a zero (null) intransitivizer as is the case in (3).

Finally, a transitive predication is constructed by combining a root (e.g. √*sek* 'be hit' or √*k'ác* 'be dry' in (1)) with a transitivizer. There are two primary transitivizers that I will discuss here: the causative (CAU) and the directive (DIR), as illustrated below.

(4)	*CAUsative Transitives*					
(a)	[√sek-s-ás]	ti	sq'úm'ts-a	ti	twéw'w'et-a	
	hit-CAU-3ERG	DET	ball-DET	DET	boy-DET	
	'The boy hit the ball'					
(b)	[√k'ác - s - as]		(c)	[√kwís - (t)s - as]		
	dry CAU ERG			fall - CAU - ERG		
	'x dried y'			'x dropped y '		

(5)	*DIRective Transitives*					
(a)	[√sek-en-ás]	ti	sq'úm'ts-a	ti	twéw'w'et-a	
	[hit-DIR-3ERG]	DET	ball-DET	DET	boy-DET	
	'The boy hit the ball'					
(b)	[√k'ác - an' - as]		(c)	√kwís - in' - as		
	dry - DIR - ERG			fall - DIR - ERG		
	'x dried y'			'x dropped y' or 'x threw y down'		

2.3. Agent Control

Note that *both* the causative transitivizer -*s* and the directive transitivizer -*Vn(')* combine with an unaccusative predicate to yield a predicate with an inherent *causative* meaning. In particular, applying either the CAU or the DIR to the root '(be) hit' in (1c) yields 'x caused y to be(come) hit' - that is, 'x hit y', as illustrated in (4a) and

(5a). Applying either of these transitivizers to the root '(be) dry' in (1a) yields 'x caused y to be(come) dry' —that is, 'x dried y'; cf. (4b) and (5b). Finally, applying the CAU or the DIR to the root 'fall' yields 'x caused y to fall' - that is, 'x dropped y'; cf. (4c) and (5c). What then is the difference between the CAUsative in (4) and the DIRective in (5)? The difference lies in the degree of "conscious (mindful) control" (Dixon 1993) of the agent over the action denoted by the predicate. The directive transitivizer is said to yield a *control* transitive (cf. Thompson 1985): the subject of a directive has full control over the action denoted by the verb. Thus, (5a) cannot be used to report that the boy inadvertently hit the ball. Likewise, the ACT and MDL intransitivizers yield control intransitives: the referents of the subjects in (2) are human participants to which we ascribe conscious (mindful) control with respect to the situation denoted by the verb. They are neither hitting nor hunting inadvertently.

In contrast, the CAUsative yields a neutral control transitive: the subject of a CAUsative either lacks control or *need not* have control over the action denoted by the predicate. In van Eijk's own words,

(6)   In the above cases, -s- [= CAU] is used only where we do not have full control of the subject over the action. However, as we shall see in 18.8, *-s-* is not a 'non-control' transitivizer but rather it is indifferent (or neutral) with regard to control; N [= DIR] is definitely used to mark full control of the subject over the action.   (van Eijk 1985: 134)

To summarize, the subject of a DIRective is an agent in full control over the action, whereas the subject of CAUsative is an agent that need not have control over the action: (4a) can be used to report that the boy inadvertently hit the ball; (5a) cannot. Note that this difference in degree of agent control between the CAUsative and the DIRective explains the shift in lexical meaning between (4c) and (5c): applying the CAUsative to the root 'fall' yields 'drop' whereas applying the DIRective to the same root yields either 'drop' or '*throw*'.

At first glance, it might seem that we could reduce agent control to volition or intentionality. For instance, we could stipulate that the subject of a directive is assigned the role volitional actor whereas the subject of a causative is assigned the role +/- volitional actor. This analysis however is untenable. There are at least three reasons for rejecting it.

First, volition is not inherent to the meaning of agent but merely a diagnostic for agentivity. Thus, although we can impute an intention or ascribe volition to the subject of a control predicate, this by no means entails that every sentence with a control predicate describes a volitional action. That volition or intentionality are *merely* diagnostics for agentivity is emphasized by Dowty (1979) in his discussion of active vs. stative sentences. Dowty argues that in the sentence *John is being rude,* John is not inadvertently rude. Crucially, however, this sentence does not entail that "John is intentionally rude but merely that the property of being rude is under his control, is something that John could avoid doing if he chose". Dowty (1979) —for whom the notion of AGENT is built into the meaning of a higher predicate DO— then concludes that,

(7)   The meaning of DO cannot be equated with the notion of intentionality or volition. ...we call this reading volitional because we impute responsibility and purpose to the subject of an active sentence ...Thus, state under the unmediated control of the agent may be the best phrase for describing DO.   (Dowty 1979: 118)

Thus, as Thompson (1985: 393) himself states "The traditional notion (non)-volitional covers only part of the semantic sphere represented and fails to capture the generalization."

2.4. 'Out of Control'

The second problem is that control cannot be reduced to a single binary opposition, as our discussion of the distinction between the full control directive and the neutral control causative should have already established. Indeed, control is a three way distinction: control vs. neutral control vs. out of control. In particular, Salish languages have what is called an out of control marker "...which emphasizes the absence of control over some state or event" (Thompson 1985: 401). As we shall see in the next section, when the out of control discontinuous clitic *ka...a* in ST' is affixed to a verb with an external argument, it suppresses agent control, yielding either an ability reading or an accidental reading.

Finally, the third reason for not reducing control to an opposition between a volitional vs. non-volitional agent is that out of control applies freely to predicates which can never be under the control of an agent in the first place since they lack an external argument altogether. That is, it applies to unaccusative predicates, yielding a suddenly/all at once, accidental reading. I will argue that the assumption that causatives and unaccusatives share the same underlying semantic structure explains why a morphological operation that productively applies to unaccusatives —but also suppresses agent control whenever there is an agent— should or could exist in the first place. The distribution of the out of control readings in ST' is summarized in the following sections.

2.4.1. The ability reading of 'Out of Control'

When the discontinuous morpheme *ka...a* combines with either a zero (bare) unergative or an overtly derived unergative, it suppresses the agency of the agent, yielding an 'able to' reading. That is, once *ka...a* has been affixed to the verb, the sentence no longer describes an action or an event, but rather the ability or the capacity of the subject to perform the action denoted by the verb; compare (8a-d) with (2-3) above.

(8)   *Zero-unergatives*
       (a)   *ka*   - álkst   - kan   - *a*
             OOC   - work   - 1SG.SUB- OOC
             'I am able to work'

Derived ACT unergatives

(b) ka   - sek   - cál   - a   ti twéw'w'et-a
    OOC - hit   - ACT   - OOC   DET boy-DET
    'The boy is able to hit (people)'

(c) ka   - k'ác   - cal   - a   (d) ka   - túp-   - cal   - a
    OOC - be dry - ACT   - OOC   OOC - punch - ACT - OOC
    'S/he is able to dry'   'S/he is able to punch'

Derived MDL unergatives

(e) ka   - píx   - em   - a   (f) ka   - áts'x-   - em'   - a
    OOC - hunt   - MDL   OOC   OOC - seen   - MDL - OOC
    'S/he is able to hunt'   'S/he is able to see'

Note that out of control can also yield a 'managed to' reading (e.g. *I managed to work*). I will not treat this reading as a third distinct reading but merely as the past of the 'able to' reading. In other words, I analyse *I managed to work* as *I was able to work*. —cf. van Eijk (1983: 17) who gives the following entry for *ka...a* "suddenly, unexpectedly, by accident, (finally) able to do it".[2]

2.4.2. *The accidental reading of 'Out of Control'*

When *ka...a* combines with either an unaccusative or a causative, it does not yield an 'able to' reading. It yields an *accidental* reading, as illustrated in (9) and (10). In particular, note the parallel between (9a) and (10a), (9b) and (10b) or (9c) and (10c).

(9) *Unaccusatives*

(a) ka   - kwís - a   ti   k'ét'h   - a
    OOC - fallen OOC   DET   rock   DET
    'The rocked dropped accidentally'

(b) ka   - tség   - a   ta-   qmút   - s-   - a
    OOC - torn   OOC   DET   hat-   3SG.POSS -DET
    'His hat got torn by accident'

(c) ka   - múl   - a   i   n -   sílhts'7 - a
    OOC - immersed   OOC   PL.DET   1SG.POSS   shoe   - DET
    'My shoes got put in the water by accident'

(d) ka   - gúy't   - a
    OOC - sleep - OOC
    'He fell asleep by accident'

(e) ka   - tsíq   - kan   - a
    OOC - stabbed - 1SG.SUB   OOC
    'I got stabbed by accident'

(2) Note that neutral control transitives can also give rise to a 'managed to' reading (*without* out of control morphology, cf. Thompson 1985). Clearly, much more needs to be said about the distribution of this reading since it can also arise with neutral control causatives. However, since I have not as yet established its distribution, I set aside the issues that this reading raises in this paper.

(f) *ka*   - tség   - *a*   n-   píph   - a
     OOC - torn   OOC   1SG.POSS   paper   - DET
     'My paper got accidentally torn'

(g) *ka*   - láw   - *a*   ti   lóp -a
     OOC - hung   OOC   DET   rope-DET
     'The rope got hung up by accident'

(h) *ka*   - cúk'w   - *a*   ti   szík   - a
     OOC - be pulled - OOC   DET   log   - DET
     'The log got accidentally dragged'
     (e.g. hooked on a truck)

(10) *Causatives*

(a) *ka*   - kwís   - (t)s   -*as*   - *a*
     OOC - fallen   - CAU -ERG   - OOC
     'He dropped something by accident'

(b) *ka*   - tseg   - s   - as   -*a*
     OOC - torn   - CAU -ERG   - OOC
     'He tore it by accident'

(c) *ka*   - múl   - s   -as   - *a*
     OOC - immersed - CAU --ERG   - OOC
     'He put it in water by accident'

(d) *ka*   - mát'   - s   - kan   - *a*
     OOC - mixed   - CAU   - 1SG.SUB - OOC
     'I mixed it up accidentally'

(e) *ka*   - sek - s   - ás   - *a*   ti   sq'úm'ts-a   ti   twéw'w'et-a
     OOC - hit - CAU   ERG   OOC   DET ball - DET   DET   boy - DET
     'The boy hit the ball (accidentally)'   * 'The boy is able to hit the ball'

Finally, out of control morphology cannot co-occur with the DIRective transitivizer (recall that the DIR signals a full control transitive):

(11) *ka   √sék   - en   - a   *ka - √páqw7   - an   - a
      OOC - hit   - DIR   - OOC   OOC - scared   - DIR   - OOC
      *ka - √kwís   - in'   - a
      OOC -fallen   - DIR   - OOC

2.4.3. *The suddenly reading of 'Out of Control'*

Whereas a sentence with out of control applied to a causative describes an event that happened accidentally, a sentence with out of control applied to an un-accusative describes an event that happened spontaneously, all at once, suddenly, un-expectedly and/or accidentally.[3] Thus, compare (12a) with (12b), or (12c) with (12d). Note also that the root in (12g) is a bound root: it cannot surface unsuffixed. As Davis (this volume) states "most roots may surface only if they have undergone one

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(3) Interestingly, van Eijk notes that "Many cases of *-s-* [= causative] seem to have a momentaneous aspect tinge…, while N [= Directive] often refers to a continuous action." (van Eijk 1985: 153).

or more aspectual processes". For instance, the root √*qácw* 'break' does not surface unsuffixed, it surfaces as either *ka-qácw-a* 'break suddenly' or as *s-qácw* 'broken' (with the stative prefix *s-*).

(12) (a) ka   - páqu7   - lhkán   - a
         OOC   - scared   - 1SG.SUB - OOC
         'I got scared suddenly'

     (b) ka   - páqu7   - s   - kán   - a
         OOC   - scared   - CAU - 1SG.SUB - OOC
         'I accidentally scared him'

     (c) ka   - qám't   - a
         OOC   - hit-   - OOC
         'to be hit suddenly (accidentally)'

     (d) ka   - qám't   - s-   - kan-   - a
         OOC   - hit   - CAU - 1SG.SUB - OOC
         'I accidentally hit someone'

     (e) ka   - t'al   - a   (h) ka   - lhéxw   - a
         OOC   - stop   OOC   OOC   - come up - OOC
         'to stop accidentally, suddenly'   'to break, shatter all of sudden'

     (f) ka   - nem'   - a   (i) ka   - lwés   - a
         OOC   - blind   - OOC   OOC   - break   - OOC
         'to go blind suddenly'   'to appear all of sudden'

     (g) ka   - hál'h   - a   (j) ka   - xléq'   - a
         'He appeared', or   OOC   - roll down - OOC
         'He was born'   'to roll down suddenly'

Can we make sense of the fact that out of control yields either a suddenly or an accidental reading when applied to unaccusative predicates that denote either a simple state (e.g. √*nem'* 'blind') or a change of state (e.g. √*xléq'* 'to roll down')? I believe we can in so far as both these out of control readings focus on the *inception* of the state or the change of state specified by the predicate.

Dowty (1986: 50) argues that "an adverb like *suddenly* will cancel the pragmatic inference that the state obtained earlier...[yielding] an inceptive interpretation of the stative". This is precisely the effect of out of control when it applies to a root such as √*páqu7* 'scared' or √*nem'* 'blind': it focuses on the inception of the state, on its sudden, spontaneous coming into being. As for the accidental reading, it is also an inceptive reading. As Smith (1983: 489) notes, adverbs "which relate to control" such as *accidentally* occur freely in inchoatives where they are associated with the inception of a change of state by an unnamed agent. In sum, out of control signals either that a (change of) state came into being suddenly, spontaneously and/or accidentally. In Thompson's (1985: 420) words: out of control in Salish suggests "the spontaneous happening or result of some unspecified agent's act".

To conclude, out of control raises three major questions. First, recall that a neutral control transitive and an out of control transitive both denote events which are *not* under the unmediated control of an agent. What then is exactly the difference between a neutral control transitive and an out of control transitive?

Second, what is the generalization (if any) that explains the distribution of the ability reading and the accidental reading? Thirdly, why can the same morphological operation suppress agent control when applied to a predicate with an external argument and at the same productively apply to predicates which lack external arguments —that is, to predicates denoting actions which are never under the control of an agent in the first place. Finally, what is out of control? In particular, why does it yield precisely the readings that it yields and how do we formally and uniformly derive these readings?

3. Causation vs. Accidental Causation

Recall that both the out of control causative in (13a) and the neutral control causative in (13b)[4] can be used to report a situation in which Bucky inadvertently breaks the window.

(13) (a)   *The 'Out of Control' Causative*
           ka   - sek'w   - s   - ás   - a   ti   nk'wan'ústen-a s-Bucky
           OOC - broken - CAU - ERG - OOC DET   window-DET   NOM-Bucky
           'Bucky broke the window (unintentionally)'
      (b) *The Causative*
           sek'w   - p   - s   - ás   ti   nk'wan'ústen-a s-Bucky
           broken - INC - CAU - ERG   DET   window-DET   NOM-Bucky
           'Bucky broke the window (unintentionally)'

What then is the difference between a simple causative and an out of control causative? As the following paradigms illustrate, these two types of causatives differ in one fundamental respect. The causer in an *out of control* causative must be a human agent: substitution of the event nominal 'the wind' or 'the storm' for 'Bucky' in (13a) yields an ungrammatical sentence, as shown in (14).

(14)   *The 'Out of Control' Causative*

(a)   *ka - sek'w - s   - ás   - a   ti   nk'wan'ústen-a ti   k'éxem-a
        OOC broken - CAU - ERG- OOC DET window-DET   DET wind-DET
        'The wind broke the window'
(b)   *ka - sek'w - s   - ás   - a   ti   nk'wan'ústen-a ti   qvl-alh-tmícw-a
        OOC broken - CAU - ERG- OOC DET window-DET   DET bad-CON-land-DET
        'The storm broke the window'

In contrast, there is no such restriction on the subject of a causative: the causer can be either a human agent such as 'Bucky' in (13b), or an event nominal such as 'the wind' or 'the storm':

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(4) The root √sek'w is in fact a bound root: it never surfaces unsuffixed. Thus, in (13b) and (15) (as well as (19a), (19c), (47), (63a) and (67b) below in the text), it surfaces with the inchoative suffix -p. In (13a), the root surfaces suffixed with out of control ka...a. Note that the inchoative marker is in complementary distribution with the out of control marker. It is also incompatible with the active intransitivizer -cal, as shown by (19e).

(15)   *The Causative*

(a)   sek'w - p   - s   - ás   ti   nk'wan'ústen-a ti   k'éxem-a
        broken - INC - CAU - ERG   DET   window-DET   DET wind-DET
        'The wind broke the window'
(b)   sek'w - p   - s   - ás   ti   nk'wan'ústen-a ti   qvl-alh-tmícw-a
        broken - INC - CAU - ERG   DET   window-DET   DET bad-CON-land-DET
        The storm broke the window'

In order to understand what this asymmetry signifies, I will first interpret it in terms of Jackendoff's (1990) decomposition of the traditional notion of Agent into two independent roles: extrinsic instigation and willful agency (on the notion of Agent see also Minkoff, this volume).

(16)   (a)   One sense of Agent, "extrinsic instigator of action" is captured by the role "first argument of causer"... However, a second sense is "volitional actor". This appears in the well-known ambiguity of Bill rolled down the hill, where Bill *may* or *may not* [emphasis added] be performing the action willfully. Generally, it seems that any Actor, if animate is subject to this ambiguity..."   (Jackendoff 1990: 128-129) "The possibility of willfulness arises from the fact that an event of causation can be reanalyzed as an actor performing an action... . [W]illfulness or intentionality is an optional property of an *actor...*"
                                                                   (Jackendoff 1983: 176)
        (b)   *Extrinsic Instigator*
                The wind rolled the ball down the hill
        (c)   *Willful Agency* (+/– volitional actor)
                Bill rolled down the hill

The causative and the out of control causative thus differ in one crucial respect: an extrinsic instigator such as *the wind* in (16b) or the *storm* in (14-15) is never the subject of an out of control causative. I conclude that only a participant that is capable of willful agency can be out of control. Out of control morphology signals that the action denoted by the verb is not under the control of this human agent: Bucky in (13a) acted accidentally or unintentionally. Crucially, only participants capable of willful agency can accidentally bring about the occurrence of an event, as illustrated in (17) were we see that adverbs of control (*accidentally* or *deliberately*) are illicit in sentences with event descriptions in subject position:

(17)   (a)   *Flyod's singing accidentally/deliberately broke the window
        (b)   *The cold accidentally/deliberately froze the lake
        (c)   *A change in the molecular structure accidentally/deliberately broke the window
                (adapted from Partee quoted in Parsons 1990: 113)

We can thus identify out of control causation as *accidental* causation. This generalization explains the restrictions that out of control imposes on the external

argument of a predicate: (14a-b) are ungrammatical because they can only have the illicit interpretation in (18a'-b'), respectively. The *wind* and the *storm* do not do anything —hence, they cannot accidentally break the window.

(18) (a) *ka* - sek'w - s - ás - *a*   ti   nk'wan'ústen-a ti   k'éxem-a
          OOC   broken - CAU - ERG - OOC DET window-DET   DET wind-DET
      (a') *'The wind broke the window accidentally'
      (b) *ka* - sek'w -s   - ás   - *a*   ti   nk'wan'ústen-a ti   qvl-alh-tmícw-a
          OOC broken - CAU - ERG - OOC DET window-DET   DET bad-CON-land-DET
      (b') *'The storm broke the window accidentally'

We can now answer our initial question: what is the difference between a neutral control and an out of control transitive since both specify causation of a change of state which is not under the unmediated control of an agent? A neutral control causative merely specifies causation —whether the resulting event was accidentally /deliberately caused by a human agent, or non-accidentally caused by an extrinsic instigator. In contrast, an out of control causative only specifies accidental causation. The subject of an out of control causative must be a human participant because only participants capable of willful agency can accidentally bring about the occurrence of an event. As we shall see in section 10, the hypothesis that out of control is the equivalent of a passive defined on the event structure of a predicate will explain why out of control transitives can only be used to describe events that were accidentally caused.

4. The distribution of the ability and the accidental reading

I now address the question of which generalization underlies the distribution of the ability and the accidental reading of out of control *ka...a*.

4.1. Inherent Aspect

Recall first that when *ka...a* combines with either a causative or an unaccusative, it yields an accidental reading, whereas when it combines with either a zero unergative or a derived unergative, it yields an ability reading. I give two paradigms illustrating all the relevant readings derived from the root √*sek'w* 'broken'.[5]

(19) (a) sek'w - p   ti   nk'wan'ústen-a
          broken - INC   DET window-DET
          'The window broke.'

(5) See footnote (4).

(b) Adding out of control to an unaccusative

ka -	sek'w	- a	ti	nk'wan'ústen-a
OOC	broken	- OOC	DET	window-DET

'The window was accidentally/suddenly broken
*'The window is able to/can break'

(c) Deriving a CAUsative from an unaccusative

sek'w	- p	- s	- ás	ti	nk'wan'ústen-a
broken	- INC	- CAU	- ERG	DET	window-DET

'He broke the window' 'x cause y to be broken'

(d) Adding out of control to the derived CAUsative

ka	- sek'w	- s	- ás	- a	ti	nk'wan'ústen-a ti	sqáycw-a
OOC	broken	- CAU	- ERG	- OOC	DET	window-DET DET	man-DET

'The man broke the window accidentally.'
*'He is able to break the window'

(e) Deriving an unergative[6]

sek'w	- cál	ti	sqáycw-a
broken	- ACT	DET	man-DET

'The man breaks (things in general)'

(f) Adding out of control to the derived unergative

ka -	sek'w	- cál	- a	ti	sqáycw-a
OOC	broken	-ACT	- OOC	DET	man-DET

'The man is able to break (things in general)'
*'The man breaks (things in general) accidentally'

The ability reading arises when out of control is affixed to an unergative predicate, as illustrated in (19f). In contrast, the accidental reading arises when out of control is affixed to either an unaccusative as in (19b) or a CAUsative verb as in (19d). The difference between these two classes of predicates is aspectual: a (derived) unergative denotes an activity —that is, an atelic or unbounded event (an event that is ongoing, that has no culmination or natural end point). In contrast, both unaccusatives and causatives denote telic or bounded events (events that culminate when the change of state specified by the lexical meaning of the root comes about— e.g. when the *window* in (19a) or (19c) comes to be broken. The following preliminary generalization emerges.

(20) The accidental reading obtains in sentences describing telic (bounded) events. The ability reading obtains elsewhere (i.e. in sentences which describe atelic (unbounded) events).

In the following section, I will provide crucial support for the generalization in (20) by examining the effect of VP-external operators on the distribution of out of control readings.

(6) Recall that unergatives are morphologically derived from unaccusatives by suffixation of an intransitivizer; see Davis (this volume), the discussion in section 2.2 and also footnote 15.

4.2. VP-external Operators and the distribution of the accidental reading

I have argued that the accidental reading arises when out of control morphology is applied to a telic verb. This reading, however, is lost when either the combination [out of control + causative] or [out of control + unaccusative] occurs under the scope of certain operators such as the progressive auxiliary. As shown by the minimal pairs in (21), only the ability reading obtains under the scope of the progressive:

(21) *The progressive auxiliary*
(a)   *ka*   - sek'w   - s   - ás   - *a*   ti   nk'wan'ústen-a ti   sqáycw-a
       OOC   broken   - CAU   - ERG - OOC   DET   window-DET   DET man-DET
       'The man broke the window accidentally'
       *'He is able to break the window'
(a')   wa7 *ka* - sek'w - s   - ás   - *a*   ti   nk'wan'ústen-a ti   sqáycw-a
       PROG OCC -broken- CAU   - ERG - OOC   DET   window-DET   DET man-DET
       'The man is able to break the window'
       *'The man is breaking the window accidentally'
(b)   *ka*-sek-s-ás-*a*   ti sq'úm'ts-a   ti twéw'w'et-a
       OOC-hit-CAU-ERG-OOC   DET ball-DET   DET boy-DET
       'The boy hit the ball (accidentally)'   *'The boy is able to hit the ball'
(b')   wa7 *ka* -sek -s   - ás   - *a*   ti   sq'úm'ts-a ti   twéw'w'et-a
       PROG OOC -hit - CAU -ERG   -OOC   DET   ball-DET   DET boy-DET
       'The boy is able to hit the ball' *'The boy is hitting the ball accidentally'
(c)   *ka*   - kwís - *a*   ti   k'ét'h'-a
       OOC - fall   - OOC   DET   rock-DET
       'The rock accidentally fell'
(c')   wa7 *ka*   - kwís - *a*   ti   k'ét'h'- a
       PROG OOC - fall - OOC   DET   rock-DET
       'The rock can fall'

The distribution of the out of control readings in (21) follows from the generalization in (20), given the well-known similarities between progressive event sentences and statives. In particular, for Dowty (1986), a progressive sentence is aspectually stative (no matter what the aspectual class of its lexical verb) because it has the criterial property of statives —namely, the subinterval property.[7] The accidental reading is lost when the out of control-transitive occurs under the progressive marker *wa7* because a sentence with the progressive no longer describes a telic event: it focuses on an interval in the temporal structure of the verb that leads up to but does not include its culmination point. Thus, when out of control is applied to a causative under the scope of the progressive, the ability reading obtains because the sentence describes an open ended event (a process).

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(7) According to the subinterval property, if a states holds for an interval, it does so at the smallest subinterval of that interval. Thus, Max *was running* is classified as stative because if Max was running from 1:00 until 2:00 PM, then he was running at all (or most) subintervals of this interval.

The accidental reading is also lost when either an out of control unaccusative or an out of control causative occurs under negation as in (22b-c) or under the adverb 'always' as in (22d-f).

(22) *Negation and adverbial quantification*

(a) *ka*-sek-s-ás-*a*   ti sq'úm'ts-a   ti twéw'w'et-a
     OOC-hit-CAU-ERG-OOC   DET ball-DET   DET boy-DET
     'The boy hit the ball (accidentally)'

(b) *cw7aoz*   kw-s   *ka*-sek-s-ás-*a*   ti sq'um'ts-a   ti twéw'w'et-a
     NEG   DET-NOM OOC-hit-CAU-ERG-OOC   DET ball-DET   DET boy-DET
     'The boy is not able to hit the ball'
     *'The boy is accidentally not hitting the ball'

(c) *cw7aoz*   kw-s   *ka* - kwís- *a*   ti   k'ét'h'-a
     NEG   DET-NOM OOC - fall - OOC   DET   rock-DET
     'The rock can't fall' ('There 's no way that rock can fall')

(d) *papt*   sek-s-ás   ti sq'úm'ts-a   ti twéw'w'et-a
     always hit-CAU-ERG   DET ball-DET   DET boy-DET
     'The boy always hits the ball'

(e) *papt*   *ka*-sék-s-as-**a**   ti sq'úm'ts-a   ti twéw'w'et-a
     always OOC-hit-CAU-ERG-OOC   DET ball-DET   DET boy-DET
     'The boy is always able to hit the ball'
     *'The boy is accidentally always hitting the ball'

(f) *papt*   kw-s   *ka*-gúy't-*a*   ti   sk'úk'wm'it-a
     always DET-NOM   OOC-sleep-OOC   DET   child-DET
     'The child always goes to sleep/ is always able to sleep'

Once again, the distribution of the out of control readings in (22) follows from the generalization in (20). The accidental reading is lost in (22b-c) because it can arise only in sentences which describe (telic) events and negated sentences do not describe events: (22b) (with or without *ka...a*) asserts that no hitting event occurred at some contextually salient time. Indeed, it has often been suggested that negation has the effect of converting a sentence describing an event into a state description (e.g. Max didn't die entails that Max is alive). (20), thus, correctly predicts the unavailability of the accidental reading under negation. Likewise, the loss of the accidental reading in (22e-f) where the verb is under the scope of the adverbial quantifier *papt* 'always' is not surprising if,

(23) [Q]uantificational sentences behave very much like sentences which des-
      cribe states (In fact, this is one of the reasons why quantificational sen-
      tences are sometimes classified as state describing).

(Kamp & Reyle 1993: 638).

Thus, (22e-f) do not describe the occurrence of an event but a generic or characteristic property of the subject. For concreteness, I assume that when the universal adverb of quantification *papt* applies to an event denoting predicate, it yields an individual level predicate (cf. Demirdache 1996). The sentences in (22e-f) are, thus, aspectually stative and an accidental reading is consequently unavailable.

Finally, the accidental reading is lost when an out of control causative occurs under the scope of a modal operator (e.g. *kelh* 'will, might' or *k'a* 'apparently').

(24) *Modality*

    (a) ka   - sek - s   - as - á   kelh ti   sq'úm'ts-a ti   twéw'w'et-a

           OOC - hit - CAU - ERG - OOC MOD DET ball-DET   DET boy-DET

           'The boy will/might be able to hit the ball'

           *'The boy will/might be hitting the ball accidentally'

    (b) *ka*   - kwís - *a*   kelh   ti   k'ét'h'- a

           OOC - fall - OOC   MOD   DET rock-DET

           'The rock will/might drop'   *'The rock will/might drop accidentally'

This time, the unavailability of the accidental reading does not follow from the generalization in (20): (24) does not describe an atelic event (that is, either a process or a state). It describes an irrealis event, an event that will either necessarily or possibly culminate at some future time. Accordingly, (20) must be revised as in (25a).

(25a) The accidental reading obtains in sentences which describe telic events that have culminated at some past time t. The ability reading obtains elsewhere.

Note, however, that it is not surprising that the accidental reading is uniformly lost under the scope of either a modal, negation or the progressive if, as argued by Dowty (1996), any sentence under the scope of the progressive, negation or a *modal* is aspectually stative.[8] In particular, Dowty argues that sentences with either the progressive, negation or a modal are aspectually stative because they have the criterial property of stative sentences: the subinterval property (see footnotes 7 and 9). Adopting Dowty's criteria for defining aspectual classes, we could replace the generalization in (25a) with (25b).

(25b) The accidental reading obtains in sentences which describe accomplishment/achievements. The ability reading obtains elsewhere (i.e. in sentences which describe activities or which are aspectually stative).[9]

Let's recapitulate. We first established that the accidental reading can only be defined for those predicates whose inherent temporal structure includes a culmination point —that is, for verbs denoting either a change of state or causation of a change of state but not for verbs denoting activities (e.g. unergatives). We then established that the distribution of the two out of control readings is not *solely*

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(8) Dowty (1996: 44) first demonstrates that progressive sentences are aspectually stative (since they satisfy the subinterval property) and then states that "It can be similarly shown that the negation of any atomic sentence will be a stative sentence, and given an appropriate semantics for modals, any atomic sentence plus a modal will be stative."

(9) Note, that if we assume Dowty's test for aspectual classes, then the major opposition is between activity sentences and statives which (more or less) satisfy the subinterval property, and accomplishments and achievements which can never satisfy the subinterval property. Thus, *be asleep* is classified as stative because if Max was asleep from 1:00 until 2:00, then he was asleep at *all* subintervals of this time. Likewise, *run* is classified as an activity because if Max ran from 1:00 until 2:00, then *most* subintervals of this time are times at which Max ran. In contrast, *build a house* is classified as an accomplishment/achievement because if Max built a house between 1:00 and 2:00, then it is false that he built a house in any subinterval of this time.

determined by the inherent temporal structure of the predicate to which *ka...a* is affixed: it is determined by the temporal contour of the sentence as a whole. In particular, the accidental reading is lost in a sentence with either the progressive, negation, an adverb of quantification or a modal because such a sentence is aspectually stative —no matter what the aspectual class of it lexical verb (Dowty 1986). Aktionsarten —in particular, whether the lexical meaning of the verb itself makes available a culmination point— determines to a large extent the semantics of out of control morphology *merely* because it determines to a large extent the aspectual structure of the sentence. In sum, the distribution of the accidental reading is also determined by VP-external operators because aspect is not solely a property of verbs or verb phrases but a property of the entire sentence, determined compositionally by the aspectual structure of the predicate in combination with predicate-external operators (cf. Dowty 1986 or Smith 1983).

Before closing this section, I would like to emphasize that the distribution of the accidental reading in ST' is not surprising, as the following English paradigm is intended to illustrate. The contrast between (26a) and (26a') illustrates that the adverb *accidentally* cannot occur —or yields a very *strained* interpretation— in sentences describing states, activities or characteristic properties but occurs freely in sentences describing telic events. (26b-e) show that the accidental reading is lost (or strained) under the scope of the progressive, negation or the future.

(26) (a) * Max hates asparagus acci-   vs. (a') Rosa hit Max accidentally
           dentally
           * Max walks accidentally   Rosa fell accidentally
           * Max accidentally walked   Max accidentally walked to
                                                    the store

      (b) * Rosa is breaking her leg   vs. (b') Rosa broke her leg acciden-
           accidentally   tally
           *The vase is falling accidentally   The vase fell accidentally

      (c) √ Max didn't accidentally   =   (c') Max punched Gerald delibe-
           punch Gerald   tely
           √ Max didn't accidentally fall =   Max fell deliberately

      (d) * Max accidentally didn't   vs. (d') Max accidentally punched
           punch Gerald   Gerald
           * Max accidentally didn't fall   Max accidentally fell

      (e) */√ Max will accidentally   (e') OK only if speaker is
           punch Gerald   clairvoyant
           */√ Max will accidentally fall   OK only if speaker is
                                                    clairvoyant

In sum, only events which are asserted to have *happened* can (easily) be presented or viewed as accidental —be it in ST' or in English. Finally, support for the generalizations presented in this section comes from Soh (1994). Soh analyses the meanings associated with the verbal prefix *ter* in Malay. This prefix yields either an adjectival passive reading, an accidental reading or an abilitative reading. Soh states that the accidental reading occurs in transitive sentences with *perfective* aspect and *is incompatible with negation;* in contrast the ability reading is *imperfective* and *common in*

negative statements. The distribution of out of control in ST', thus, subsumes the distribution of *ter-* in Malay.[10]

5. What is 'Out of Control'?

I now turn to the core question that out of control raises: what is it? In particular, why can the same morphological operation suppress agent control with verbs that have an external argument and at the same productively apply to predicates which denote actions which are never under the control of an agent in the first place —since they lack an external argument altogether? Why does it yield precisely the readings that it yields and how do we formally derive these readings?

Hovav & Levin (1995) distinguish between morphological operations which operate on the lexical representation of verb meanings (in their framework, derive new Lexical Conceptual Structures) and morphological operations which solely affect the argument structure of predicates. They define passive and reflexivization as morphological operations which only affect argument structure. For instance, reflexivization in French derives an intransitive verb from a transitive verb. As such it affects the number of arguments that a predicate projects (the verb is syntactically monadic) but it does not affect the aspectual classification of a predicate: *Gerald hit Max* and *Gerald hit himself* in French describe the same type of event. In contrast, morphological operations which affect lexical meanings alter either the aspectual template associated with a predicate or the pairing of a name with an aspectual template.

I propose that the range of readings that out of control yields in ST' can be uniformly derived from the hypothesis that *out of control is a passive defined on the lexical meaning* of a predicate. More precisely, I will define out of control as a morphological operation which alters either the aspectual template associated with a predicate or the pairing of a name with an aspectual template, as proposed in Hovav & Levin.

5.1. The Syntax of Events (Pustejovsky 1988, 1991)

The analysis developed here is based on the model of lexical meaning proposed in Pustejovsky (1989, 1991, 1995) and van Hout (1994, 1996). In Pustejovsky, the aspectual properties of verbs —and then sentences— are configurationally and compositionally defined in terms of recursive event structures. In particular, he proposes that events are not atomic entities: they are decomposed into recursive subeventual structures. There are three primitive event types whose terminal

(10) Soh (1994a) derives the three readings of *ter-* from a novel model of argument structure with two tiers —a thematic tier and an aspectual tier (see also Soh 1994b, Grimshaw 1990 and Ritter & Rosen 1993)— and a linking/delinking mechanism. The adjectival passive reading is derived by delinking both the aspectual role and the thematic role associated with an external argument; the accidental reading is derived by delinking solely the aspectual role of the external argument; and the abilitative reading is derived by delinking the aspectual roles of both the external and the internal arguments.

elements are atomic events. I restrict the term *eventuality* to *atomic* events. A state (**S**) is defined as in (27a): it is a single eventuality that is viewed or evaluated relative to no other eventuality. A process (**P**) is defined as in (27b): it is a sequence of identical eventualities. Finally, a transition (**T**) is defined in (27c): it is as a single event evaluated relative to another single event. Note that E in (27c) is an event meta-variable which stands for any of the three basic event types in (27), allowing recursion of event structure.

(27) *Event types*
     (a) S   →   [e]   (b) P   → $[e_1 \dots e_n]$
     (c) T   → $[E_1 \quad E_2]$ E = { S, P, T }

In both Pustejovsky and van Hout, every verb in the lexicon is associated with an event type. For instance, a stative verb is lexically specified with the event type of a state whereas an activity verb is associated with the event type of a process, as illustrated in (28a-b) respectively. Transitions can be recursive or non-recursive. In particular, a causative predicate is a recursive transition consisting of two subevents: the causing process (E1) and the resulting change of state (E2). E2 is itself analysed as a (non-recursive) transition: an eventuality is evaluated relative to its opposition ($\neg$p becomes p), as illustrated in (28c).

(28)   *Atelic event types*   *Telic event type*
        Stative verbs   *Activity verbs*   *Recursive transition*
     (a) e.g. know, love   (b) e.g. walk, run, sleep   (c) e.g. break, melt
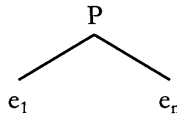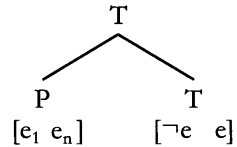
5.2. Event Composition (Pustejovsky 1988, 1991, van Hout 1994, 1996)

The event structure of a predicate specifies its default aspectual class. Recall however that the event type of a sentence need not match the event type of the main verb. As was discussed in section 4.2, VP-external operators such as adverbials, the progressive or negation shift the aspectual class of the verb. Aspectual shifts can also be triggered by the syntactic or semantic type of an internal argument (e.g. whether or not it is a PP or whether or not it is a bare plural). In Pustejovsky (1991), aspectual shifts which derive from the syntactic combination of a verb with either a PP or a resultative phrase are derived via event composition. Event composition is a generative procedure which constructs complex events from the three primitive event types defined in (27). The output of event composition must conform to (27).

In van Hout (1994, 1996), event composition derives shifts in the aspectual properties of verbs triggered by morpho-syntactic operations on the base form of the verb. In particular, she proposes that all predicates —that is, verbs, prefixes, particles and prepositions— are lexically associated with an event type. The event-type of a morphologically complex verb is compositionally derived by combining the event structure of the base verb with the event structure of the particle (or prefix). For instance, Dutch *eten* 'eat' by itself denotes an atelic event (the activity of eating) whereas *eten op* 'eat up' denotes a telic event: the particle *op* adds a resulting state to the meaning of the base verb (the state of being eaten up). This event type shift (from atelic to telic) is derived by combining the basic event type of the verb with the event type of the preposition, as in (29).

(29)   *Atelic-telic event type shifting*   (van Hout 1996)
        (a) *eten* 'eat'   (b) *op* 'up'   *opeten* 'eat up'

$$
\text{P} \qquad\qquad \text{S} \quad \Rightarrow \quad
\begin{array}{c}
\text{T} \\
\diagup\diagdown \\
\text{P} \qquad \text{S}
\end{array}
$$
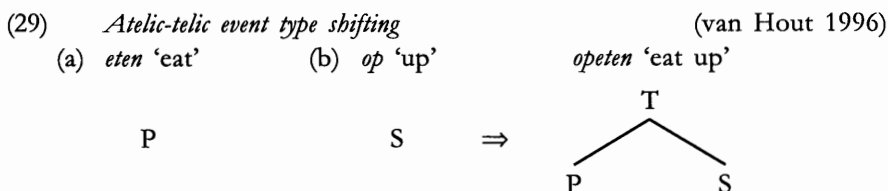
In sum, aspectual classes —be it of morphologically complex verbs, verb phrases or <u>sentences</u>— are compositionally derived by assuming a level of event structure and a generative procedure for composing events. Having thus set the stage, I will now turn to the question of how to formally define out of control.

5.3. 'Out of Control' and Event Decomposition

Following van Hout and Pustejovsky, I assume that certain morpho-syntactic processes operate on event structures. In particular, aspectual affixes (including (in)transitivizers) in ST' will be analysed as the equivalent of the event-type shifting particles or prepositions discussed by these authors —that is, they are event functors, applying to a given event type to derive a different event type— see Davis & Demirdache (1995).

Note that the event functors discussed by van Hout and Pustejovsky apply to a given event type to yield a *higher* event type: they apply to the primitive event types defined in (27-28) to yield complex (recursive) event types. For instance, the particle *op* in (29) applies to a process to yield a transition between a process and a resulting state. I will also assume that *ka...a* is a type-shifting functor. However, unlike the functors discussed above, it does not apply to a given event type to yield a *higher* event type but applies to a given event type to yield a *lower* event type. More precisely, I make the following preliminary hypothesis,

(30)   When *ka...a* is affixed to a predicate, it shifts the event-type associated with this predicate into a lower event-type by suppressing the initial subevent in its event structure.

We will now see how the hypothesis in (30) derives the ability reading of out of control *ka...a*.

6. Deriving the ability reading

Recall that the ability reading obtains whenever out of control is affixed to a bare or derived unergative, as was illustrated in section 2.4.1 above. Any analysis of out of control must thus provide answers to the following two questions.

(31) (a) Why does a sentence with an activity verb no longer assert the occurrence of an event once the verb is affixed with out of control morphology?

(b) Why does a sentence with an activity verb affixed with out of control assert the *ability* of the external argument to perform an action?

Note that (31a) and (31b) are correlated but independent questions: prima facie, it is not clear why suppressing the event reading of a verb should yield an ability reading —as opposed to say a generic habitual reading or an irrealis event reading, as I will argue shortly.

6.1. Type-Shifting an Activity Verb into a Stative Verb

(Derived) unergatives denote activities and as such have the event structure of a process:

(32) *Event type of (derived) unergatives*

$$P$$
$$e_1 \qquad e_n$$
$$\text{WORK } (x)$$
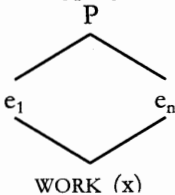
The out of control morpheme *ka...a* was defined as an event type-shifting functor that applies to a given event type to yield a *lower* event type by suppressing its initial subevent. Thus, when *ka...a* applies to a process, it will suppress the temporal interval that defines the beginning of the event (e_1 in (32)), yielding the derivation in (33).

(33) (a) *álkst* 'to work' $\Rightarrow$ (b) *ka-álkst-a* 'to be able to work'

$$P$$
$$e_1 \qquad e_n$$
$$\text{WORK } (x)$$

$$S$$
$$e$$
$$\text{WORK } (x)$$
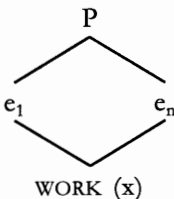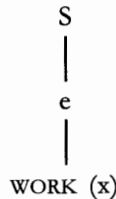
As shown in (33b), when the event functor *ka...a* applies to a verb denoting an activity, it yields a verb with the event structure of a stative-verb such as 'know' or 'love'. Recall that the event structure associated with a stative verb is a state (a single eventuality evaluated relative to no other eventuality, as in (28a) above). Activity verbs like 'work' are similar to stative verbs like 'know' in that they describe episodes that lack a culmination point. However, the temporal schema of an activity verb differs from that of a stative verb in one crucial respect: whereas an activity verb describes an event that starts at an initial boundary, a stative verb does not describe any kind of change and thus has no natural boundaries. We now have a very simple answer to (31a). A sentence with an activity verb affixed with out of control morphology *no longer asserts the occurrence of an event* because out of control suppresses the temporal edge that defines the beginning of the event.

The notion of agent is associated with the participant that identifies the initial subevent of an event structure since the agent is the causer or the instigator of an event (cf. Grimshaw 1990, Pustejovsky 1989, 1991, Ritter & Rosen 1993 and van Hout 1994, 1996). A passive suppresses an external argument position (or the agent role in the thematic grid of the verb —depending on the theory). In contrast, out of control does not suppresses the external argument. It suppresses the agentivity of the external argument by suppressing the subevent in an event structure that defines the beginning of the event and is, thus, associated with the notion of agent / instigator.

6.2. Stative Verbs have an inherent ability reading (Vendler 1967)

I now turn to the question of why out of control yields precisely an ability/capacity reading. Note that generic/habitual sentences are aspectually stative and further can express capability or ability, as illustrated in (34) by the fact that the sentences in (a/b) can be paraphrased as in (a'/b').

(34) (a) 'John runs 50 miles without ever stopping'
      (b) 'The program parses complicated questions'
      (a') 'John can run 50 miles without ever stopping'
      (b') 'The program can parse complicated questions'
                                             (Chierchia & McConnel-Ginet 1992: 234)

So why does type-shifting an activity verb into a stative verb yield a sentence which asserts that Bucky has the a bility or the capacity to perform the activity of working as in (35a), but *not* a sentence that asserts that working is a characteristic or generic property of Bucky; that Bucky frequently or habitually works, as in (35b)?

(35) ka   - álkst - a   s -   Bucky
      OOC   work   OOC   NOM   Bucky
      (a) 'Bucky is able to work' or 'Bucky can work'
      (b) * 'Bucky works' (i.e. Bucky habitually/regularly/frequently works)

That suppressing the event reading of an activity verb in ST' (with out of control morphology) yields a reading with the modal force of *can* is not surprising since

suppressing the event reading of activity verbs in English (with present tense) yields a range of readings which includes a deontic modal reading, as illustrated in (36a) from Zagona (1990: 390). What is surprising is that suppressing the event reading of an activity verb in ST' yields only a reading with the modal force of *can* but not a generic (habitual activity) reading or a reading with a future-oriented modal force (e.g. Bucky might/will work).

(36) (a) *Deontic modal reading*
      What can she do?   She sings
                         She walks already
                         She writes poetry

Habitual activity reading	*Future reading*
Mary (always) sings	Mary sings tomorrow
The chimney smokes	We eat at 7:00
She eats very little	We watch TV tonight

The answer to these questions is provided by Vendler (1967: 104-5) who argues that stative verbs have an inherent able to reading,

(37) Still, I think it might be useful to mention, by way of digression, a surprising feature about states which is not strictly connected with considerations of time.
      ... while *to be able to run* is never the same thing as *to run* or *to be able to write a letter* is by no means the same thing as *to write it*, it seems to be the case that, in some sense, *to be able to know* is *to know*, *to be able to love* is *to love*...
      ...Hence the airy feeling about *I can know*, *I can love*, *I can like*, and so forth. This also explains why *I can believe it* is very often used instead of *I believe it*.

Indeed, Vendler uses the inherent ability reading of statives as a test for classifying a verb as stative: 'run' and 'write' are not stative because 'to be able to run' and 'to be able to write' are not (respectively) equivalent to 'to run' and 'to write'. Conversely, 'to know' is stative precisely because 'to be able to know' is equivalent to 'to know'.

I have argued that out of control *ka...a* is an event functor that type-shifts an event type into a lower event type. When it applies to a process verb like 'work', it *suppresses* the eventuality that defines the beginning of the event and, as such, is the equivalent of a passive defined on event structure. The output of event decomposition is a verb associated with the same constant WORK —which represents the aspects of the meaning of 'work' that distinguishes it from other verbs with the same event structure— and the same argument structure. Crucially, however, this verb has *the aspectual structure of a stative verb*, such as *know* or *love*.[11] We now have an answer to the question in (31b). The resulting sentence asserts the

(11) Note that the event structure proposed in (28a) for stative verbs such as *know* or *love* is clearly unsatisfactory: (28a) does not distinguish between a monadic predicate denoting an individual level property (e.g. *tall*) and a dyadic stative verb such as *know*. We cannot, thus, derive the addicity of a stative predicate from its

ability of the external argument to perform the action specified by the verb because stative verbs have an inherent 'able to' meaning.

In sections 9-10, I will show that the proposal that out of control is the equivalent of a passive defined on event structure uniformly derives the ability, the accidental reading and the spontaneous occurrence reading of out of control. However, in order to do so, we must first define the event structures of unaccusative and causative predicates.

7. Why does out of control apply to unaccusatives?

Recall that when out of control applies to causatives, it yields a subset of the readings that it yields with unaccusatives. In particular, out of control yields an accidental reading with both causatives and unaccusatives but an ability reading with unergatives. This reading is lost when either the unaccusative or the causative is under the scope of negation, the progressive, *papt* 'always' or modality —and an ability/capacity reading surfaces. With unaccusatives, out of control further yields a suddenly, spontaneous occurrence reading. This set of facts raises the following questions.

First, why can the same morphological operation suppress agent control with verbs that have an external argument and at the same time productively apply to predicates which denote events or states which are never under the control of an agent in the first place —since they lack an external argument altogether? How can such a morphological operation exist?

Second, why can out of control applied to an unaccusative yield an 'it accidentally (suddenly) happened' reading since *accidentally* is an adverb of volition or intentionality. Note, however, that "adverbs which relate to control" occur freely in inchoatives (Smith 1985: 489). As Smith argues, this is the case because they can be associated with the *coming into existence* of the change a state denoted by the predicate (Smith further observes that a control adverb can even occur in statives in so far as one can "associate the adverbial with the inception or maintenance of the state by an unnamed agent.")

I believe that the answer to these questions is that unaccusatives have underlying causative semantics, as proposed in Chierchia (1989), Levin & Hovav (1995) Pustejovsky (1995) and Reinhart (1991) among others. This conclusion is surprising since ST' is a language where unaccusatives are morphologically 'primitive' —that is, a language where all transitives and unergatives are morphologically derived (Davis, this volume). I by no means dispute this analysis: I merely claim that the *semantic* representation of a morphologically unaccusative predicate is causative. I will argue that the underlying causative hypothesis explains why control is an opposition that cuts across all aspectual classes and, thus, pervades the grammar of Salish languages,

event structure (which I take to be the null hypothesis, following Davis & Demirdache 1995). Note that Pustejovsky (1995) proposes a more complex —that is, bi-eventual— structure for some stative verbs (in particular, psychological statives). However, defining the event structure of statives is well-beyond the scope of this paper.

as Thompson (1995) emphasizes. In particular, both controlled events (actions) and non-controlled events (states and changes of states) can all be marked as out of the control of an agent. Indeed, recall that for Thompson (1995: 420), out of control suggests "the spontaneous happening or result of *some unspecified agent's act* [emphasis added]".

The hypothesis that unaccusatives have underlying causative semantics will explain 1) why out of control can apply to unaccusative predicates, 2) why out of control applied to an causative yields a subset of readings that it yields with an unaccusative, and 3) why it yields a spontaneous occurrence, all at once, suddenly reading. I first spell out this hypothesis.

7.1. Unaccusatives are underlyingly causative

I propose that unaccusative and causative (be it control or non-control) predicates share the *same* underlying event structure, as in Pustejovsky (1995). In particular, both unaccusatives and causatives have the event type of a recursive transition, as shown in (38). The complex event structure in (38) is constituted of two subevents: a process P which brings about a resulting change of state T.

(38) *Event structure of unaccusatives and causatives*

$$
\begin{array}{ccc}
 & T & \\
 & \diagup\diagdown & \\
P & & T \\
[e_1\ e_n] & & [\neg e\ \ e]
\end{array}
$$
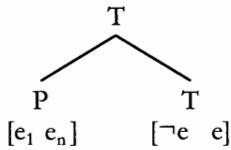
For Pustejovsky, the difference between an unaccusative and a causative predicate is, as is standardly assumed, syntactic and aspectual. Aspectually, a causative is an accomplishment: the event denoted by the verb is viewed as a whole, is presented in its entirety; the "focus of the interpretation" thus includes the natural endpoints of the event (the causing event P and the resulting event T). In contrast, an unaccusative is an achievement predicate: the focus of the interpretation is on the temporal interval that defines the end point of the event (the change of state T) but not on the temporal interval that brings about this change of state. In sum, both unaccusatives and causatives have the same underlying subeventual structure. The aspectual difference between a causative and an unaccusative lies in the relative prominence of the two subevents in (38): in an unaccusative predicate, only the final subevent (T) is foregrounded (focussed on) whereas in a causative, the initial subevent (P) is also foregrounded (focussed on). Event foregrounding (or focusing) is achieved via a mechanism called event-headedness, which I will not be assuming here (event-headedness indicates the relative prominence of a subevent).

Syntactically, a causative projects two arguments whereas an unaccusative projects only one (internal) argument. Arguments correspond to participants in an event structure: the participant associated with the first subevent (the process) is the

external argument of a predicate whereas the participant identifying the second subevent (the change of state) is the internal argument (see also Grimshaw 1990, van Hout 1994, 1996, or Ritter & Rosen 1993). Finally, syntactic projection of arguments is constrained by the relative prominence of the two subevents in (38). Informally, an unaccusative verb only projects an internal argument position because only the second subevent in (38) is foregrounded. When the first subevent is also foregrounded, as is the case with a causative, the verb will project two argument positions.

Turning to unaccusative roots in ST', I propose that roots such as √*sek* 'be(come) hit with a stick (or a whip)' or √*k'ac* 'be(come) dry' are lexically associated with the following event-representations:

(39) (a)

$$T$$
$$P \quad T$$
$$[e_1 \ e_n] \quad [\neg e \ e]$$
HIT WITH A STICK (x)

(b)

$$T$$
$$P \quad T$$
$$[e_1 \ e_n] \quad [\neg e \ e]$$
DRY (x)
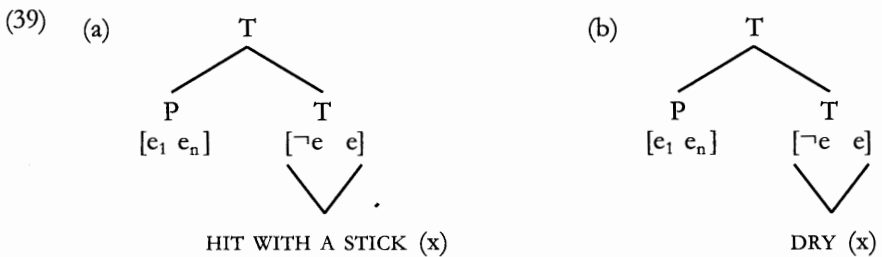
I will refer to the aspects of the meaning of the predicate that distinguishes it from other predicates with the same event structure, as the *name* of the predicate and use the name of the predicate in capital letters to represent this constant. Thus, HIT WITH A STICK or DRY (respectively) represent the essence of 'hit with a stick' and 'dry'. Following Pustejovsky (1995), I assume that only subevents that are foregrounded project an argument position in the syntax. I will assume, however, that an event is foregrounded iff it is associated with a name. Under this proposal, *the roots 'hit with a stick' and 'dry' have the patient-oriented interpretations 'get hit with a stick or whip' and 'become dry' because HIT WITH A STICK and DRY (respectively) identify the subevent in (39) that denotes a change of state.* That is, the subevent in (39) that is foregrounded or focused is the subevent that is associated with a name. The only subevent that is foregrounded in (39) is the change of state T, thus only the participant that is associated with the change of state T can be projected onto an (internal) argument position in the syntax. In sum, roots in ST' have a fundamentally unaccusative meaning because the name of the root is associated solely with the final subevent in an event structure.[12]

---

(12) Note that some roots are ambiguous between either a stative interpretation or a change of state interpretation, as is the case with √*k'ac* 'become dry' or 'be dry'. Thus, (i) can be translated as either (ii), (iii) or (iv).

(i)	√k'ác	ti	s-ts'wán-a	(ii)	'The salmon is dry'	
	dry	DET	NOM-salmon-DET	(iii)	'The salmon dried'	(iv) 'The salmon got dried'

To capture this ambiguity, I assume that certain roots can be lexically associated with either of the following event-representations:

7.2. Remarks on the meaning of Unaccusative Predicates

There are over two thousand unaccusative predicates in ST' —see Davis (this volume) and van Eijk (1985) for a semantic classification of these predicates. I am *not* claiming that (39) is the event-structure of all unaccusative predicates in ST'. van Eijk (1985: 167) states that agent control could be relevant for non-control predicates and, in particular, suggests a distinction between "states that preclude volition" and those that do not. This distinction is subsumed by the distinction between externally caused verbs and internally caused verbs, proposed in Levin & Hovav (1995). The latter argue that *only unaccusative predicates that can be externally caused by an agent, an instrument or a natural force have underlying causative semantics.* (39) will, thus, not be the semantic representation of roots which describe events which cannot be externally caused —such as nominal predicates (e.g. √qwu7, 'water'); or alternatively cannot be externally caused by a human agent (that is, which preclude volition) such as weather predicates (e.g. √kwis, 'to rain')). (39) will be the semantic representation of the subset of unaccusative roots in ST' that can be externally caused, be it by a human agent or not; or alternatively of those roots which do not preclude volition. I surmise that these would include those roots which Davis (this volume) classifies as either 1) change of state predicates (e.g. √zuqw 'to die') or else are ambiguous between a change of state and a stative interpretation, (e.g. √k'ac 'become dry' or 'be dry'; cf. (1a-b) and footnote 12); 2) as change of location predicates (√tsicw 'get there, arrive'); 3) as patient oriented predicates (√sek 'be(come) hit with a stick or whip' or √tup 'be(come) punched'); and 4) as psychological predicates (√páqwu7 'be afraid').

It goes without saying that only a careful investigation of the semantics of aspectual classes in ST' (and, in particular, how they are compositionally derived) can establish to what extent the above proposal is correct; this, however, is well beyond the scope of this paper. I will, nonetheless, provide three arguments (independent of out control) in support of the proposal that unaccusatives that can be externally caused are underlyingly causative in ST'.

(v) T
  P   T
[e_1 e_n] [$\neg e$ e]
       DRY (x)

(vi) T
  P   S
[e_1 e_n]   e
       DRY (x)
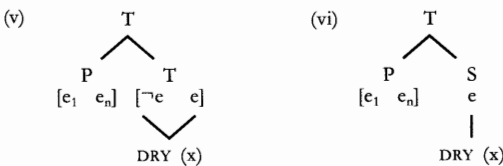
In (v), a process P brings about a resulting change of state T; this yields the change of state interpretation of √k'ac 'become dry' in (iii-iv). In (vi), a process P brings about a resulting state S; this yields the stative interpretation of √k'ac 'be dry' in (ii).

The predicates associated with the event structures in (v) and (vi) are unaccusative because 1) only foregrounded subevents can project an argument position in the syntax and, 2) an event is foregrounded iff it is associated with a name (cf. discussion of (39)). Thus, only the participant (respectively) associated with the resulting change of state T in (v) and the resulting state S in (vi) can be projected onto an (internal) argument position in the syntax.

7.2.1. *Verb + instrument meanings*

Beck (1995) states that unaccusative verbs can have the schema [verb + instrument], as illustrated by the Lushootseed examples in (40a) quoted from Beck, or the ST' examples in (40b) (cf. (1c)). Note, crucially, that the instrument —which brings about the change of state specified by the predicate— is incorporated into the meaning of the root.

(40) (a) *pus* 'be struck by a flying object', *č'axʷ* 'be struck by a stick',
     t'uc' 'be shot'
 (b) √*sek* 'be(come) hit with a stick or whip',
     √*qam't* 'be(come) hit by thrown object'

One of the central arguments for assigning an underlying causative structure to unaccusatives comes from the fact that a sentence with a change of state predicate can make reference to the event that caused the change of state to come about (see Chierchia, Pustejovsky 1995 or Levin & Hovav 1995). For instance, the PP in *The package arrived with the postman* makes reference to the initial event that causes the package to arrive. Reference can be made to this initial event E1 precisely because E1 is part of the semantic representation of 'arrive'. (In contrast, **The package arrived by the postman* is ungrammatical because the *by*-phrase does not make reference to the initial event itself but rather to the agent of E1 —which in turn cannot be projected since E1 is not foregrounded). By the same reasoning, we can explain why roots such as those in (40) exist in Salish: the instrument that is incorporated into the meaning of the root reflects the presence —in the semantic representation of the root —of the causing event E1 with which the instrument (e.g. 'with a stick or whip', 'by a flying object' or 'by a stick') must be construed.[13]

7.2.2. Get *passive readings*

The causative hypothesis, moreover, explains why certain unaccusative verbs yield what I will refer to as a *get*-passive reading, as illustrated in (41). (42) shows that this reading also surfaces with roots suffixed with the INchoative suffix *-p*, which according to van Eijk (1985: 86) expresses a change in progress or "that a state is maintained over a certain period of time" (Note that roots can be bound to the inchoative *-p*, see footnote 4).

(41) (a) √qam't   ti   sqáycw-a   (g) √tup
         hit   DET   man-DET   'to get punched'
         'The man got hit '   (h) √lepinitás
     (b) √xan'   ti   sqáycw-a   'to get punished'
         hurt   DET   man-DET   (i) √tsem
         'The man got hurt'   'to get burnt'

---

(13) Note that the possibility of an instrumental PP is often used in the literature to motivate the presence of an implicit agent. On the basis of the meaning of certain roots, I am making the same argument to motivate the presence of an implicit causing event.

(c) √pulh   'to get boiled'   (j) √k'etcw
(d) √kwelh   'to get spilled'   'to get severed'
(e) √7us   'to get thrown out'
(k) √tup   - us
    punched - face, 'to get punched in the face'
(l) √k'etcw -us
    sever - face, 'to get one's throat cut'

(42) (a) √q'welh - p   (c) √kwem - p
           burn- INC   dull (blade) - INC
           'to get burnt, scalded'   'to get dull (blade)
      (b) √k'wes - p   (d) √tses-p
           singe - INC   stretch - INC
           'to get singed'   'to get stretched'

Thompson (1985) explicitly correlates the range of meanings that non-control predicates in Salish yield with the range of meanings associated with the verb *get* in English, citing Lakoff (1971) who states that,

(43) (a) *Get* sometimes suggests responsibility on the part of the underlying (not superficial) subject.
           [16a] How did this window get opened?
           [16b] How was this window opened?
           [16a] might be used if the speaker were indignant that the window had been opened: it often means something like, 'Who had the nerve to open this window?'...
           [17a]   How did this window get opened? Sir, I cannot tell a lie: I did it
           [17d] ? How was this window opened? Sir, I cannot tell a lie: I did it
                                                           (Lakoff 1971: 155)
      (b) [11a]   The program has been pre-recorded
           [11b]   The program has gotten pre-recorded
           [11b] is not likely to be heard on television whereas [11a] is a frequent utterance. If it were used, [11b] would imply that *something was done to the program* [emphasis added] to its detriment'.
                                                           (Lakoff 1971: 154)

The relevant observation that emerges from (43) is that a *get*-passive reflects the presence of a causing event in the lexical meaning of the predicate: reference is made to the implicit initial event that caused the window to be opened in [16a], or the program to be recorded in [11b].

We can explain the *get*-passive reading that surfaces in (41-42), if we assume that unaccusative predicates such as √tsem 'to get burnt or √q'welh-p 'to get burnt, scalded' have the underlying causative structures in (44) (Note that since morphological inchoatives in ST' describe an ongoing change, I assume that the resulting change of state T in (44b) does not culminate, as indicated by the subscript n on the final eventuality.)

(44) (a)   *Root*   (b)   *Root + Inchoative*

$$\text{T}$$

(a)
- T
  - P $[e_1\ e_n]$
  - T $[\neg e\ \ e]$ — BURNT (x)

(b)
- T
  - P $[e_1\ e_n]$
  - T $[\neg e_1\ \ e_n]$ — SCALDED (x)
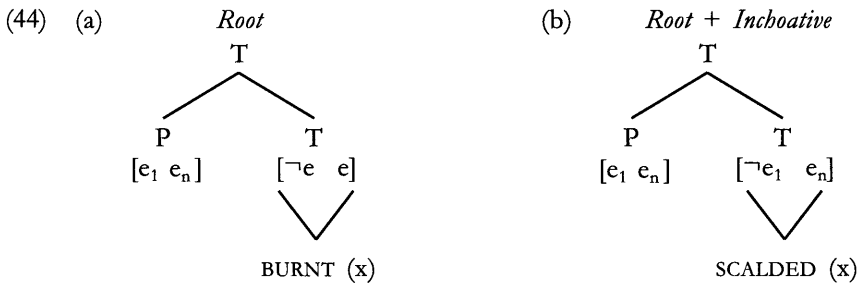
The unaccusative predicates illustrated in (41-42) can make reference to an implicit initial event —the event that caused x to get hit in (41a), x to get hurt in (41b) or x to get scalded in (42a/44b)— because this causing event is part of the sub-eventual structure of the unaccusative predicate. Since, however, the causing event is backgrounded (that is, is not identified by the name of the predicate), the participant identifying this initial event cannot be projected into the syntax.

7.2.3. *Unaccusative and causative lexical reflexives*

Finally, the causative hypothesis explains why there are two classes of so-called 'medio reflexives' in ST'. Medio-reflexives are (formally) intransitive predicates that have a self-directed (inherently reflexive) reading; they are derived by suffixation of *lec/ilc* to a root.[14] There are two classes of medio-reflexives: control (i.e. agentive) reflexives as in (45a) and non-control (i.e. with an inchoative meaning) reflexives as in (45b); see Davis (1996) for discussion and Davis (this volume).

(45) (a) legw - *ilc*   'to hide oneself',   k'ác   - *lec*   'to dry oneself',
           kwís - *lec*   'to lower oneself',
      (b) t'úp-*lec*'to get twisted',   k'wúc' - *lec*   'to get crooked',
           ʒenp' - *lec*,   'to get tangled'

Davis & Demirdache (1995) analyse the control reflexives in (45a) as inherently reflexive causatives: the participant identifying the initial process (P) and the participant identifying the resulting change of state (T) in the bi-eventual substructure of a causative are lexically identified (cf. footnote 16). Once we assume that unaccusatives are underlyingly causatives, we can extend this analysis to the unaccusative medio-reflexives in (45b): inchoative medio-reflexives are also inherently (that is, lexically) reflexivized causatives. Following Chierchia (1989), I assume that the causing event in a lexically reflexivized unaccusative verb is interpreted statively —that is, (45b) is interpreted as 'a property of x caused x to become twisted, crooked, tangled'. In section 7.4, we will see that event focusing is responsible for the difference in control between these two types of lexical reflexives.

(14) The alternation between *lec/ilc* is conditioned by stress.

8. Transitive predicates

Assuming that both unaccusatives and causatives share the same underlying event structure, what then is the difference between an unaccusative and the causative which is morphologically derived from it by suffixation of the CAU transitivizer -s-? The answer is straightforward: suffixation of the CAU transitivizer does not alter the aspectual structure of the predicate. Suffixation of this transitivizer to a root merely serves to foreground the initial subevent in the event structure of the root. Recall that event foregrounding determines projection of argument positions in the syntax. Hence, once the causing event E1 is foregrounded, the participant that identifies this initial subevent can be projected onto an external argument position in the syntax.

Evidence for the claim that the CAU transitivizer -s- does not contribute aspectually to the meaning of root is provided by its distribution (cf. Davis & Demirdache 1995). -s- can co-occur with all other aspectual markers —that is, with the stative s-, the inchoative -p, the medio-reflexive -lec, and the active intransitive -cal. In contrast, all other aspectual morphemes are in strict complementary distribution. The derivation of a syntactically causative predicate such as [√sek-s] 'to hit with a stick or a whip' from an unaccusative predicate (√sek 'get hit with a stick or a whip') is illustrated in (46).

(46) (a) *Event structure of the stem*   (b) *Event structure of [stem + cau]*
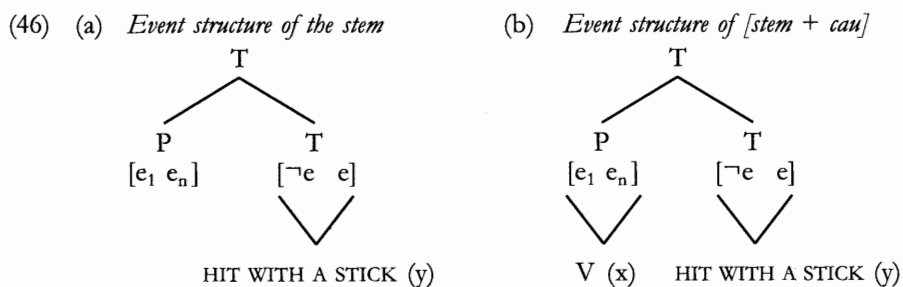
In (46a), only the change of state (T) is foregrounded. The predicate is, thus, syntactically monadic: it can only projects the participant which identifies this change of state (T). Once the CAU transitivizer is added to the stem, both subevents are foregrounded. The predicate is, thus, syntactically dyadic: it projects both an external and an internal argument. I have associated the initial subevent P with an unspecified name (V) to indicate that P is foregrounded. Crucially, however, the name associated with P in (46) lacks any lexical content whatsoever: it is merely a variable ranging over predicates. Now, recall that the CAUsative is used to describe situations in which the subject lacks full control over the action denoted by the predicate (see section 2). In particular, only causatives derived by suffixation of -s- allow event descriptions in subject position, as was illustrated in (15) repeated below.

(47) (a) sek'w - p - s - ás ti nk'wan'ústen-a ti k'éxem-a
           broken - INC - CAU - ERG DET window-DET DET wind-DET
           'The wind broke the window'

(b)   sek'w - p - s - ás   ti   nk'wan'ústen-a ti   qvl-alh-tmícw-a
      broken - INC - CAU - ERG   DET window-DET   DET bad-CON-land-DET
      'The storm broke the window'

The event causatives in (47) have the following event representations.

(48)
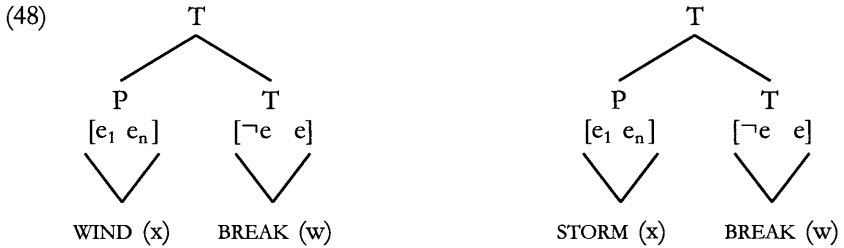
In (48), the lexical content of the event nominal in subject position —*the wind* or *the storm* in (47)— has been mapped onto the causing sub-event P. This means that the process that causes the window to become broken is the event nominal *the wind* or *the storm* itself, as Parsons (1994) argues is his discussion of event causatives such as *The explosion broke the window.*

(49)   We certainly do not want to say that the explosion is the agent of some event that caused the breaking of the window; the explosion did this by itself.   (Parsons 1990: 139)

In other words, the change of state (the window becomes broken) is not caused by a subevent of which the wind is the agent: the wind does not DO something which causes the breaking of the window. We have captured this by mapping the lexical content (the name) of the event nominal *the wind* or *the storm* onto the causing sub-event P, as in (48). Crucially, this is possible only because the name associated with P in a CAUsative event structure (e.g. (46b)) lacks any lexical content whatsoever (it is merely a variable ranging over predicates). In sum, the event structure proposed for CAUsative predicates in (46b) can elegantly explain why they allow event nominals in subject position.

8.1. Full Control vs. Neutral Control Causatives

Recall that there are two primary transitivizers in ST': the CAUsative and the DIRective. As was discussed in section 2.3, both the CAUsative and the DIRective transitivizers combine with an unaccusative predicate ('be hit' or 'be dry' in (4-5)) to yield a predicate with an inherent causative meaning —e.g. 'x caused y to be dry' or 'x caused y to be hit'. The difference between the CAUsative and the DIRective lies in the degree of control of the agent over the action denoted by the predicate. In particular, suffixation of the DIRective yields a full control predicate whereas suffixation of the CAUsative yields a neutral control transitive. More precisely, the CAUsative differs from the DIRective in two correlated respects. First, it can (but *need*

not) be used to describe a situation in which the subject lacks control over the action denoted by the verb. Second, there is no restriction on the subject of a causative: it can be a participant that is capable of willful agency or an external instigator such as 'the wind' or 'the storm' (cf.(47)). In section 3, we concluded that the CAUsative merely specifies causation: the resulting event in (46b) could have been either accidentally/deliberately caused by a human participant, or non-accidentally caused by an external instigator such as the wind or the storm in (47). In contrast, an out of control causative only specifies accidental causation. Finally, the DIRective specifies causation that is under the full control of a participant capable of willful agency.

8.2. Davis & Demirdache (1995): Agentive Predications

I now turn to the question of how to derive full-control —that is, agentive causatives. The analysis of transitive predicators proposed here differs significantly from Davis & Demirdache (1995; henceforth D&D) who do not assume that unaccusatives and transitives share the same underlying causative representation. I believe, however, that it preserves the core idea underlying their analysis of agentive (full-control) causatives.

How do we derive the agentive interpretation of (50a)? In Pustejovsky (1987, 1991), *melt* has the event structure in (50b). It is a recursive transition consisting of two subevents (a process P and a simple transition T (change of state). Event structure is then mapped onto a level of Lexical Conceptual Structure (LCS, Jackendoff 1990) which introduces a *causal agent*. The agent is the argument of the predicate ACT. CAUSE links ACT and BECOME MELTED, ensuring that in (50c) whatever action Rosa performs on the ice causes the melting of the ice.

(50) (a) Rosa melted the ice

(b)
```
        T
       / \
      P   T
```
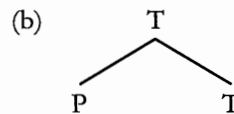
(c) CAUSE ([ACT (R, the ice)], (BECOME ([melted (ice)])))

The LCS in (50c) builds the theta-role agent into the meaning of a primitive predicate ACT, MOVE or DO (cf. Dowty 1979). D&D argue that we can dispense with higher predicates such as CAUSE, ACT, MOVE or DO —and thus, with the LCS in (50c). We can dispense with CAUSE because causation is defined as a structural entailment between the two subevents in (50b) (i.e. P causes T if P c-commands T; cf. Pustejovsky 1987). We can dispense with ACT, MOVE or DO if the causative and agentive reading of the verb *melt* are projected from different event structures —as clearly must be the case in languages like ST' which morphologically distinguish causatives from *agentive* causatives (causatives are neutral with respect to control whereas agentive causatives require full-control of the subject over the action) The core idea underlying D&D's analysis is that Rosa in (50a) is a causal agent iff Rosa performs some action of *melting* which causes the ice to be *melted*. In contrast, Rosa

is a causer (but not an agent) when there is no intrinsic relation between the causing event (E1) and the resulting change of state (E2) —e.g. Rosa accidentally turns off the refrigerator and the ice melts. This idea is summarized below:
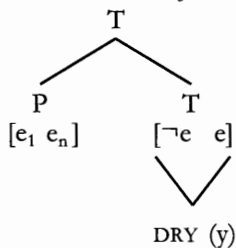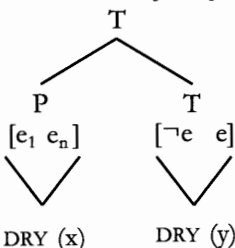
(51) (a) The participant identifying E1 is *a causal agent iff there is an intrinsic relation between the causing event and the resulting event* —that is, if the resulting (change of) state *be(come)* V is caused by a process of *V-ing*.

 (b) In contrast, the participant identifying E1 is a causer (but not an agent) when there is no intrinsic relation between the causing event and the resulting (change) of state.

8.3. The Event Representation of Full Control Causatives

Although I am assuming contra D&D (1995) that unaccusatives are underlyingly causative, the analysis I present here is a reformulation of their analysis of agentive causatives. Recall that the core idea underlying their analysis is that Bucky in (52) is an agent iff Bucky performs some action of *drying* which causes the salmon to *be(come) dry*, as stated in (51b) above.

(52) [√k'ác - an' - as]   ti   s-ts'wán-a   s-Bucky
 dry   - **DIR** - ERG   DET   NOM-salmon-DET   NOM-Bucky
 'Bucky dried the salmon'

The event structure lexically associated with the root √k'ác 'be(come) dry' is given in (53a). To ensure that the resulting change of state become dry is caused by a process of drying, D&D map the name DRY associated with the final subevent (T) onto the initial subevent (P) in (53a) which is itself not associated with a name, yielding the event structure in (53b).

(53) (a)   *Event structure of the root*   (b)   *Event structure of the [root + DIR]*

              T   T
           ╱   ╲   ╱   ╲
          P   T   P   T
      $[e_1\ e_n]$ $[\neg e\ \ e]$ $[e_1\ e_n]$ $[\neg e\ \ e]$
          ╲ ╱   ╲ ╱   ╲ ╱   ╲ ╱

                    DRY (y)   DRY (x)   DRY (y)

The operation that maps the lexical meaning DRY associated with the change of state in (53a) onto the initial process is called Predicate Cloning. Predicate cloning is an operation on event structure equivalent to *syntactic incorporation* of the lexical meaning of a lower verb onto a higher light (or empty) verb - e.g. $[_{vP1}\ [_{v1}\ (do)]$ $[_{vP2}\ [_{v2}\ laugh]\ ]] > [_{vP1}\ [_{v1}\ laugh_i\ ]\ [_{vP2}\ [_{v2}\ t_i]\ ]]$, as in Hale & Keyser (1993). Its effect is illustrated in (54): the name *dry* identifying the transition in (54a) is copied onto the initial subevent, as in (54b). Its formalization is given in (55): predicate cloning is a

function that takes the intransitive predicate in (55a) and yields a conjunction of two predicates with the same name, as in (55c).

(54)   (a)   *Event structure of the root*
       $[_T [_P e_1 \quad e_n] \qquad [_T \neg e \quad e]]$

       DRY (y)

       (b)   *Predicate cloning*
       $[_T [_P e_1 \quad e_n] \qquad [_T \neg e \quad e]]$

       DRY (x)   DRY (y)
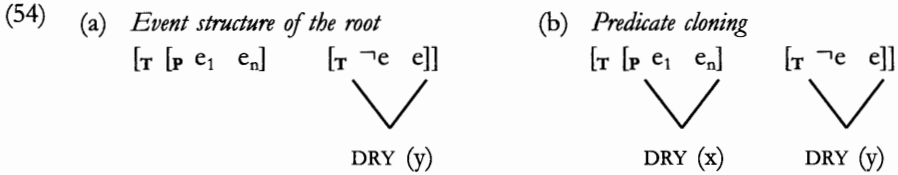
(55)   (a) $(dry)^* \quad = \quad \lambda e\, \lambda y\, [dry'\, (y, e)]$
       (b) $(DIR)^* \quad = \quad \lambda V\, \lambda e_1, \lambda e_2\, \lambda x\, \lambda y\, [V\, (x, e_1)\, \& \, V\, (y, e_2)]$
       (c)   From (a) and (b), by lambda conversion $\rightarrow \lambda e_1, \lambda e_2, \lambda x \lambda y\, [dry'\, (x, e_1)\, \&\, dry'\, (y, e_2)]$

Alternatively, I could follow D&D and assume that the DIRective transitivizer, like any lexical item, has its own *event structure*: its event type is a process. Crucially, *it has no name only aspectual content*, as represented in (56a) where V is a variable ranging over predicates. When the DIR combines with a root, its event structure merges with the initial subevent in the event structure of the root, as in (56c). Event merger, as defined in van Hout (1996), composes two event types without creating a new event structure: the process in (56a) merges with the initial process in (56b), yielding (56c). Finally, predicate cloning substitutes DRY for the predicate variable V itself associated with the initial process in (56c), yielding (56d).

(56)   (a)   *Event structure of the DIRective*
       $[_P e_1 \qquad e_n]$
       $\quad V(y)$

       (b)   *Event structure of the root*
       $[_T [_P e_1 \quad e_n] \qquad [_T \neg e \qquad e]]$
       $\qquad\qquad DRY\, (x)$

       (c)   *Event merging*
       $[_T [_P e_1 \quad e_n] \qquad [_T \neg e \quad e]]$
       $\quad V(x) \qquad\qquad DRY\, (y)$

       (d)   *Predicate cloning*
       $[_T [_P e_1 \quad e_n] \qquad [_T \neg e \quad e]]$
       $\quad DRY(x) \qquad\qquad DRY\, (y)$
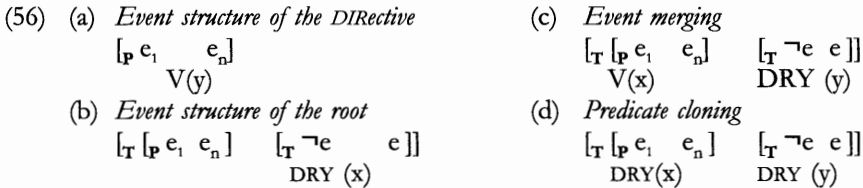
Note that both subevents in a DIRective causative are associated with (the same) name DRY. Consequently, both subevents in (53b/56d) are foregrounded, and the predicate 'dry' projects both an external and an internal argument. Why does directive yields an agentive predication? Because *there is an intrinsic relation between the process and the resulting (change) of state*: the change of state 'be(come) dry' is caused by a process of drying of which Bucky is the agent.

8.4. Summary

To recapitulate, I have proposed the following event representations.[15]

_____

(15) What about derived unergatives? Derived unergatives are syntactically intransitive, as the obligatory absence of ergative marking in (i) vs. (ii) (or iii) indicates.

(57)   (a)   *Unaccusative*   (b)   *Causative*   (c)   *Directive*

$$
\begin{array}{ccc}
\text{T} & \text{T} & \text{T}
\end{array}
$$

P	T	P	T	P	T
$[e_1 \, e_n]$	$[\neg e \; e]$	$[e_1 \, e_n]$	$[\neg e \; e]$	$[e_1 \, e_n]$	$[\neg e \; e]$

BREAK (y)   V (x)   BREAK (y)   BREAK (x)   BREAK (y)
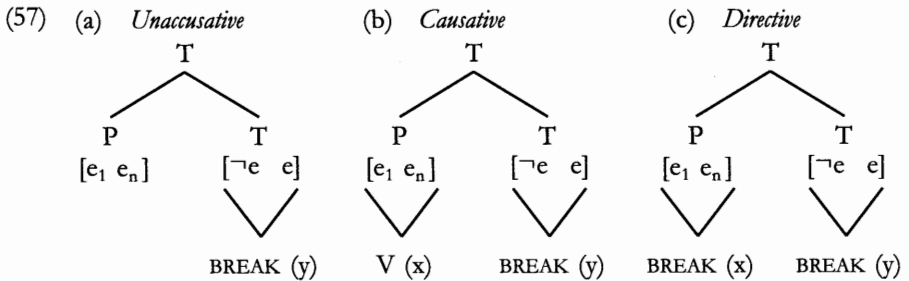
In (57a), only the resulting change of state is foregrounded. The predicate associated with this event structure is, thus, syntactically monadic: it can only project an internal argument in the syntax. In contrast, both subevents are foregrounded in (57b-c). Thus, both the CAUsative and the DIRective yield syntactically dyadic predicates. (As for the event structure of derived unergatives, see note 15.)

The directive yields an agentive predication because *there is an intrinsic relation between the process and the resulting (change) of state:* the change of state 'be(come) broken' is caused by a process of breaking. More generally, an agentive reading ensues whenever there is an intrinsic relation between the process and the resulting change of state — whenever the resulting (change of) state *be(come) V* is caused by a process of *V-ing.* Note finally that the control lexical reflexives illustrated in (45a) and discussed in section 6.3.3 are derived from the DIRective in (55c) via lexical reflexivization, following D&D.[16]

(i)	*Derived unergatives*				(ii)	*Derived transitive*				
	k'ác	- cal	- Ø	*(* as)*		k'ác	- in'	- Ø	- *as*	ti sts'wán-a
	dry	- ACT	- ABS	(*- ERG)		dry	- DIR	- ABS	- ERG	DET salmon-DET
	'She dries (stuff) '					'She dried the salmon'				

Note that although derived unergatives are syntactically intransitive, they are agentive and semantically transitive. In particular, derived unergatives permit a *with object* (van Eijk 1985). A 'with object' is a weak object in de Hoop's (1992) sense: it is a generic/non-specific theme, requiring either the collective determiner *ki* as in (iii) or the non-specific determiner *ku*. Following de Hoop (1992) and van Hout (1993), D&D analyse the weak object in (iii) as either an incorporated theme or a predicate modifier.

(iii)	k'ác	- cal	- Ø	*(* as)*	ki	sts'wán-a
	dry	- ACT	- ABS	(*- ERG)	COLL-DET	salmon-DET
	'She did some salmon-drying'					

Assuming that (in)transitivizers in ST' background or foreground a subevent in an event structure, we can recast D&D's analysis as follows. Unergatives are derived from directive transitives which have a causative event structure: a P process causes a change of state T. Suffixation of the intransitivizer *-cal* in (iii), backgrounds the resulting change of state T in the causative event frame of the verb. Backgrounding/foregrounding determines projection of arguments into the syntax. Once the resulting change of state T is backgrounded, the participant that identifies T can no longer be projected as an internal argument —it can, however, be syntactically realized as an adjunct.

(16) D&D derive the control reflexives illustrated in (45a) from directive transitives via a process of lexical reflexivization. Their analysis is illustrated by the derivation in (i-ii).

In contrast, the CAUsative yields a predicate that is neutral with respect to control because there is *no intrinsic relation* between the causing process and the resulting transition. This is the case because the process which caused the breaking of the window is unspecified (unnamed): the wind could be the causing event or Bucky could have engaged in a process of breaking in order to deliberately bring about the breaking of the window; but Bucky could just as well have broken the window by singing or by accidentally bumping into it.

Finally, I assume (following D&D) that the agentive and causative reading of a given predicate are *universally* projected from distinct event frames. In other words, the English sentence in (58a) is not ambiguous between an agentive and a causative reading. These two readings are projected from different event frames —as is clearly the case in languages like ST' which *morphologically* distinguish these readings. In particular, the DIRective event frame in (57c) yields the agentive reading of (58a), illustrated in (58b), whereas the CAUsative event frame in (57b) yields both the causative reading of (58a), illustrated in (58c), and the event causative in (58d).

(58) (a) Rosa broke the window   (c) Rosa fell and broke the window
     (b) Rosa broke the window (*accidentally)   (d) The wind broke the window

Having defined the event structures associated with unaccusative and transitive predicates, we can now go back to the question of how to derive the spontaneous occurrence and/or accidental readings that out of control morphology yields.

9. Deriving the spontaneous occurrence/accidental reading

When out of control is applied to an unaccusative, it yields a reading which has been described as 'it happened spontaneously, suddenly, unexpectedly, all at once, accidentally' (cf. van Eijk 1983, 1985, Thompson 1985 or Davis this volume). Examples are provided in (59).

(i) *Control/Directive causative*   (ii) *Control reflexive*

```
         T                                      T
        / \                                    / \
       P   T            add lec               P   T
      /\   /\             ⇒                  /\   /\
    e₁ eₙ ¬e  e                           e₁ eₙ ¬e  e
       \/                                     \/
   dry (x)  [¬dry(y) dry(y)]            dry (x)  [¬dry(x) dry(x)]
   Bucky dried the salmon              Bucky dried himself
```

The participant identifying E1 in either of the above event structures is a causal agent since the resulting change of state *become dry* in (i/ii) is caused by a process of *drying* (cf. (51) in the text). Hence, the lexical reflexives in (45a) require control of the agent over the action denoted by the verb.

(59) (a) *ka*   - páqw7 - *a*   'to get scared suddenly'
    (b) *ka*   - qám't - *a*   'to be hit suddenly, accidentally'
    (c) *ka*   - lhvk   - *a*   'to feel pooped, to conk out (suddenly)'
    (f) *ka*   - nem' - *a*   'to go blind suddenly'
    (g) *ka*   - hál'h - *a*   'to appear', or 'to be born'
    (h) *ka*   - lhéxw - *a*   'to appear all of sudden'
    (i) *ka*   - lwés - *a*   'to break, shatter all of sudden'
    (j) *ka*   - ním' - *a*   'to pass out'
    (k) *ka*   - xléq' - *a*   'to roll down suddenly'

Recall our analysis of out of control *ka...a*: it is an event functor that type-shifts an event type into a lower event type, as was defined in (30) repeated below. I will now show how this proposal uniformly derives the ability reading of out of control applied to unergatives and the spontaneous occurrence/accidental reading of out of control applied to unaccusatives.

(60) When *ka...a* is affixed to a predicate, it shifts the event-type associated with this predicate into a lower event-type by suppressing the initial subevent in its event structure.

The derivation of the ability reading is repeated in (61) (cf. section 6). The event type associated with an activity verb is a process. Out of control suppresses the initial subevent in this process (the eventuality e1), yielding a verb with the event structure of a stative verb, as illustrated in (61b). The ability reading then arises because stative verbs have an inherent ability meaning, following Vendler (1967).

(61) *Event type shifting applied to a process*
    (a) álkst 'to work'   (b) *ka*-álkst-*a* 'to be able to work'
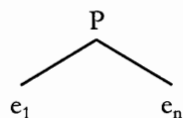
Now, when out of control applies to an unaccusative, it also suppresses the initial subevent in its event structure, just as it does in (61). However, whereas the initial subevent in the event structure of an unergative is an atomic event (e_i), the initial subevent in the event structure of an unaccusative is not an atomic event but a Process —since unaccusatives have an underlyingly causative structure. Therefore, the initial subevent that is suppressed by the event functor *ka...a* will be this complex subevent P. This is illustrated in (62). When *ka...a.* applies to the recursive transition in (62a), it suppresses the causing event P and, thus, type shifts the causative into a simple change of state predicate:

(62)   *Event type shifting applied to a recursive transition*

(a) $\sqrt{q\acute{a}m't}$ 'to be(come) hit by thrown object'   (b)   *ka* -qám't- *a*
'to be hit suddenly, accidentally
by thrown object'

$$
\begin{array}{c}
\text{T} \\
\diagup\diagdown \\
\text{P}\qquad\qquad\text{T} \\
\diagup\diagdown\qquad\diagup\diagdown \\
e_1\quad e_n\quad\neg e\quad e \\
\diagdown\diagup
\end{array}
\qquad
\begin{array}{c}
\text{add }ka...a \\
\Rightarrow
\end{array}
\qquad
\begin{array}{c}
\text{T} \\
\diagup\diagdown \\
\neg e\qquad e \\
\diagdown\diagup
\end{array}
$$

HIT BY THROWN OBJECT (y)   HIT BY THROWN OBJECT (y)
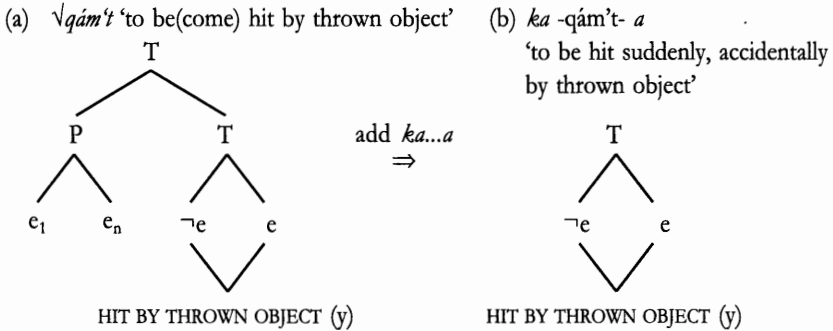
Suppression of the initial (causing) event in (62) yields the 'it happened spontaneously, suddenly, unexpectedly, all at once, accidentally' reading of out of control. More precisely, the change of state specified by the root must be construed as coming into being suddenly, all at once, spontaneously —once the causing event in the event structure of the predicate has been suppressed. This analysis captures Thompson's (1995) idea that out of control - whether it applies to controlled events (actions) or to non-controlled events (states and changes of state) —suggests "the spontaneous happening or result of *some unspecified agent's act* [emphasis added]".

We have seen that the hypothesis that out of control is the equivalent of a passive defined on the event structure of a predicate together with the assumption that unaccusatives are underlyingly causative explains why out of control yields precisely an ability reading with unergatives but a spontaneous occurrence reading with unaccusatives. More generally, the hypothesis that unaccusatives have causative semantics explains why a morphological operation that suppresses agent control with verbs that select an agent can productively apply to predicates which denote events or states which can never be under the control of an agent in the first place —since they lack an external argument altogether.

I now turn to the accidental reading of out of control transitives.

10. Deriving accidental causation

An out of control transitive describes an action that is not under the control of an agent. Crucially, however, the subject of an out of control transitive cannot be an extrinsic instigator (e.g. *the storm*), as the contrast between (63a) and (63b) illustrates (repeated from (15), section 3). It *must* be a participant that is capable of willful agency. Out of control morphology signals that the action denoted by the verb is not under the control of this human agent. In section 3, we concluded that out of control causation specifies accidental causation: the subject of an out of control causative must be a human participant because only participants capable of willful agency can *accidentally* cause an event. Thus, (63b) is ungrammatical because it can only have the illicit interpretation in (63b').

(63) (a) *CAUsative transitive*

sek'w - p - s - ás   ti   nk'wan'ústen-a ti   qvl-alh-tmícw-a
broken - INC - CAU - ERG   DET window-DET   DET   bad-CON-land-DET
The storm broke the window'

(b) *Out of control transitive*

* *ka* - sek'w -s - ás - *a* ti   nk'wan'ústen-a ti   qvl-alh-tmícw-a
OOC broken-CAU - ERG - OOC DET window-DET   DET   bad-CON-land-DET
'The storm broke the window'

(b') *'The storm broke the window accidentally'

But how do we derive the ungrammaticality of (63b)? I assume, following D&D, that the generalization in (64) explains the paradigm (63).

(64)   Out of Control only applies to *DIRective* transitives

If the input to out of control is *never* a neutral control (CAUsative) transitive, then (63b) will never be generated in the first place and, hence, will never have to be ruled out. Conversely, if the input to out of control is *always* a full control (DIRective) transitive, then the ungrammaticality of (63b) reduces to the ungrammaticality of (65).[17]

(65) *DIRective transitive*

* sek'w - an - ás   ti   nk'wan'ústen-a ti   qvl-alh-tmícw-a
broken - DIR - ERG   DET   window-DET   DET   bad-CON-land-DET
'The storm broke the window'

With this in mind let's see what happens when out of control is applied to a neutral control causative.

10.1. Out of Control applied to a Neutral Control Causative

Applying out of control to a CAUsative transitive yields the derivation in (66). Note that the input to event-type shifting in (66a) is a dyadic predicate: it projects an external and an internal argument since both subevents in its event structure are foregrounded. Crucially, however, the output of event-type shifting in (66b) is a monadic (change of state) predicate: the participant which identifies the initial subevent can no longer be projected into the syntax since this initial subevent has *itself* been suppressed.

---

(17) Recall that an event nominal such as *the storm* cannot be interpreted as the 'agent' of the event (process) that causes the window to become broken in (63) or (65) (see (49) and discussion in section 8). The event nominal *the storm* can only be interpreted as the process itself —that is, as the event that causes the window to become broken. In other words, the lexical content of the event nominal in (65) must be mapped onto the causing subevent P in the event structure of the verb *break*. This is impossible because the causing event P in a DIRective transitive is itself already associated with a name (compare the event structure of a DIRective transitive illustrated in (57c) with that of CAUsative transitive illustrated in (57b)). (65) will, thus, be ungrammatical.

(66)   *Event type shifting applied to a neutral control transitive*

(a) sek- s 'to hit something with a stick'   (b)   *ka   -sek   -s -a
         hit- CAU   OOC   hit   CAU   OOC

                                                                      *'to hit something accidentally
                                                                      with a stick'
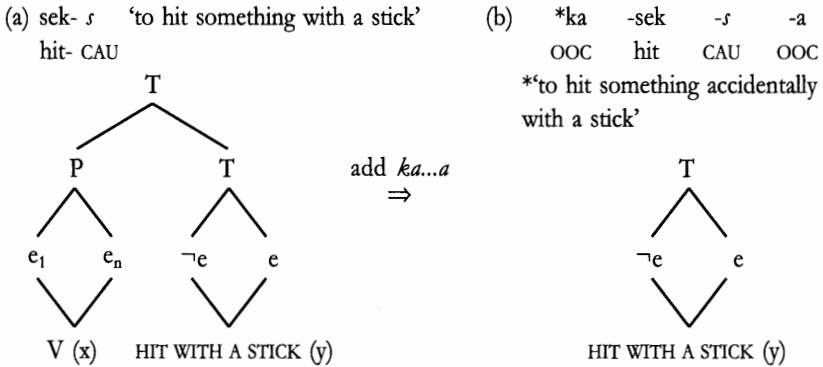
In other words, applying out of control to the dyadic predicate 'to hit something with a stick' could never yield the dyadic predicate 'to hit something accidentally with a stick', since the output of event type shifting in (66) is not a dyadic causative predicate but a monadic a change of state predicate. The output of event type shifting in (66) is the unaccusative predicate: 'to become hit accidentally with a stick'. At this point, we have two options. We can rule out the derivation in (66) altogether: suppression of the initial subevent P would be incompatible with the presence of the transitivizer -s- in the input (e.g. *sek-s*) since the function of -s- is precisely to foreground E1. Alternatively, we could assume that the output of event-type shifting is an out of control unaccusative: applying out of control to *sek-s* would yield *ka-sek-a* (and not *ka-sek-s-a*). In other words, applying out of control to the CAUsatives in (67) would yield (respectively) the out of control unaccusatives in (67').

(67)   *CAUsative transitives*   (67')   *Out of control unaccusatives*

   (a) kwís - (t)s   (a') ka-   kwis   - a
        fall   CAU   OOC   fall   OOC
        'to drop something'   'to fall suddenly, accidentally'

   (b) sék'wp - s   (b') ka-   sék'w - a
        broken - CAU   OOC   broken OOC
        'to break something hard'   'to break all of a sudden'

Whether we should rule out the derivations in (67) altogether or allow event-type shifting of a CAUsative into an (out of control) unaccusative, I leave as an open question in this paper. At this stage, I do not see what empirical evidence could decide between these two options.[18,19]

(18) For instance, the absence of the inchoative suffix -p in (67b') could be taken as evidence that (67b') is not derived from (67a) (see footnote 4).

(19) Note, however, that out of control unaccusatives *cannot* be uniformly derived from morphological CAUsatives. This is the case for two reasons. First, there are out of control unaccusatives which do not have a transitive counterpart —e.g. *ka-gúy't-a* 'to fall asleep suddenly', *ka-lhvk-a* 'to feel pooped, to conk out (suddenly)',

In sum, applying out of control to CAUsatives is either ungrammatical (if the derivation in (66) is illicit) or vacuous (we never see its output since it *never* yields an out of control causative; rather, it yields an out of control unaccusative). This is precisely the result that we wanted: we can now explain the contrast in (63) repeated below. The out of control transitive in (63b) can never surface (be generated) since applying out of control to (63a) yields either an ungrammatical output or an out of control unaccusative.

(63)   (a)   *CAUsative transitive*
             sek'w - p - s   - ás   ti   nk'wan'ústen-a ti   qvl-alh-tmícw-a
             broken - INC - CAU - ERG   DET window-DET   DET bad-CON-land-DET
             The storm broke the window'

(b)   *Out of control transitive*
       * *ka* - sek'w - s   - ás   - *a*   ti   nk'wan'ústen-a ti   qvl-alh-tmícw-a
       OOC broken - CAU - ERG - OOC DET window-DET   DET bad-CON-land-DET
             'The storm broke the window'

(b')   *'The storm broke the window accidentally'

To recapitulate, (63b) is ungrammatical because it can never be generated. Applying out of control to a CAUsative transitive is illicit because the output of event-type shifting is a (syntactically) monadic predicate. In contrast, applying out of control to either an unergative or an unaccusative (as in (61)-(62) above) is grammatical since both the input and the output of event-type shifting is a (syntactically) monadic predicate.

10.2. Accidental Causation: Applying Out of Control to a Full Control Causative

Let's now see what happens when we apply out of control to a full control (directive)transitive. A full control transitive will have the event representation in (68).

(68)

sék'w- an
broken DIR
'to break something'

---
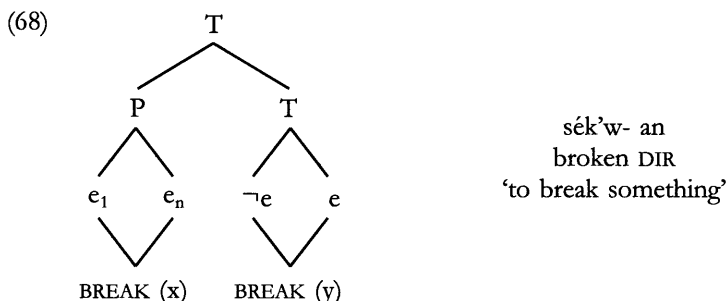
ka-*gwés-a* 'to rise to the surface', ka-*ném'-a* 'to go blind suddenly', ka-*ctép'-a* 'to pass away', or ka-*ním'-a* 'to pass out'.
Second, there are out of control unaccusatives which do not have a CAUsative counterpart; for instance, ka-*tsíq-a* 'to get stabbed accidentally, suddenly', or ka-*tség-a* 'to get torn accidentally, suddenly' have a DIRective counterpart but not a CAUsative counterpart.

Once again, out of control cannot licitly suppress the causing subevent in (68): suppression of P would either be blocked by the DIR transitivizer -*an*- (which foregrounds P) or be vacuous (that is, yield a monadic/unaccusative predicate). But then, how do we ever derive an out of control transitive? The answer comes from Hovav & Levin (1995) who propose that morphological processes which operate on the lexical representation of verb meanings (in their framework, derive new Lexical Conceptual Structures) either alter the aspectual template associated with a predicate or the pairing of a name (a constant) with an aspectual template. Adopting this proposal, I redefine out of control as in (69). Applying out of control to a full control transitive then yields the derivation in (70).

(69)   When *ka...a* is affixed to a predicate, it suppresses the initial subevent in its event structure or the name that is associated with this initial subevent.

(70)   (a) 'to break something'   (b) 'to break something accidentally'

$$
\text{(a)}\quad
\begin{array}{c}
T \\
\diagup\quad\diagdown \\
P \qquad T \\
\diagup\diagdown \quad \diagup\diagdown \\
e_1 \quad e_n \quad \neg e \quad e \\
\diagdown\quad\diagup \quad \diagdown\quad\diagup \\
\text{BREAK (x)} \quad \text{BREAK (y)}
\end{array}
\qquad
\xrightarrow{\text{add } ka...a}
\qquad
\text{(b)}\quad
\begin{array}{c}
T \\
\diagup\quad\diagdown \\
P \qquad T \\
\diagup\diagdown \quad \diagup\diagdown \\
e_1 \quad e_n \quad \neg e \quad e \\
\diagdown\quad\diagup \quad \diagdown\quad\diagup \\
V\ (x) \quad \text{BREAK (y)}
\end{array}
$$
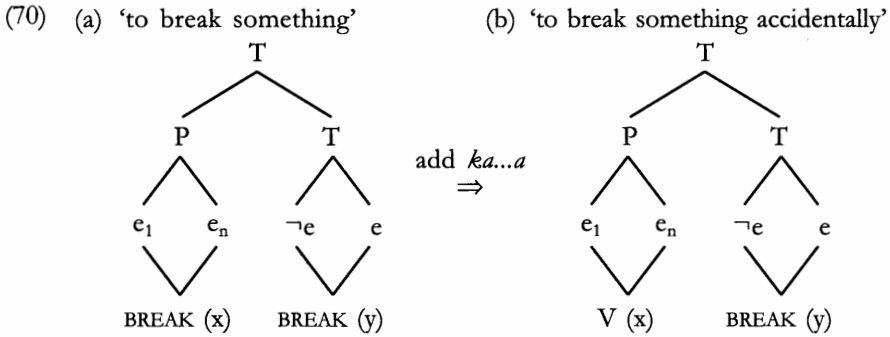
This time the derivation in (70) is licit: the input to out of control is a dyadic predicate and the output of out of control is a dyadic predicate. Recall, however, that out of control transitives always surface with the causative transitivizer -*s*- (and not with the full control transitivizer, see (11) above). Why is this the case? Because the output of out of control in (70b) is precisely the event structure proposed for a neutral control causative (see section 8 and compare (70b) with (46b)).

Now, recall D&D's analysis of agent control in (51), repeated below.

(71)   (a)   The participant identifying E1 is a causal agent iff there is an intrinsic relation between the causing event and the resulting event —that is, if the resulting (change of) state *be(come)* *V* is caused by a process of *V-ing*

     (b)   In contrast, the participant identifying E1 is a causer (but not an agent) when there is no intrinsic relation between the causing event and the resulting (change) of state.

Why does out of control suppress the control of an agent over the action denoted by the predicate? Because once out of control suppresses the name that is lexically associated with the initial subevent in an event structure, there is no longer an intrinsic relation between the causing event (P) and the resulting change of state (T), as the derivation in (70) illustrates. Whereas, in (70a), the breaking of the window is caused by an activity of breaking of which *x* is the agent, in (71b), the

breaking of the window is caused by some unspecified event of which x is the agent (for instance, x bumped into the window).

We can now explain why out of control causation specifies accidental causation, as argued in section 3. There are in fact two questions that need an answer. First, why must the subject of an out of control transitive be a participant that is capable of willful agency? Because out of control can only licitly apply to DIRective transitives and the subject of a directive must be a participant that is capable of willful agency. In particular, applying out of control to a CAUsative transitive yields either an ungrammatical output or an out of control unaccusative —but never an out of control causative (see section 10.1). Second, why does out of control morphology suppress the control that this human agent has over the action denoted by the verb? Because when out of control suppresses the name associated with the initial subevent in (70a), it de facto suppresses agent control (as defined in (71a)): there is no intrinsic relation between the causing event and the resulting change of state in (70b).

To conclude, note the telling translation that Van Eijk (1983) gives to illustrate the interpretation of the out of control transitive derived from the root √*kwis* 'to fall': the St'át'imcets sentence has not been translated as 'I accidentally dropped it' as expected, but rather as 'I bumped into it and it dropped'.

(72) *ka* -kwis -(t)s -kan -*a*
      OOC fall   CAU   1SG.SUB OOC
      'I bumped into it and it dropped'

As the translation in (72) illustrates, an out of control transitive specifies accidental causation: there is no intrinsic relation between the process, 'I bumped into it', and the resulting change of state, 'it dropped'.

11. Conclusion

I have proposed that the ability reading, the spontaneous occurrence and the accidental readings that out of control yields in ST' can be uniformly derived from the hypothesis that out of control is a passive defined on the lexical meaning of a predicate. A passive suppresses an external argument position or the agent role in the thematic grid of the verb (depending on the theory). In contrast, out of control does not suppress the agent. When out of control applies to verbs denoting activities, it suppresses the agentivity of the agent by suppressing the subevent in an event structure that defines the beginning of the event and, as such, is associated with the notion of agent or instigator. When out of control applies to causative verbs, it suppresses the agentivity of the agent by suppressing the name that is associated with the initial subevent.

The assumption that causatives and unaccusatives share the same underlying semantic structure explains why a morphological operation that suppresses agent control whenever there is an agent can also productively apply to predicates that lack an external argument altogether and, thus, why control is an opposition that cuts across all aspectual classes in Salish.

Appendix - Key to St'át'imcets (van Eijk) orthography

orthography	phonemic script		orthography	phonemic script
p	p		q'w	$\dot{q}^w$
p'	$\dot{p}$		x	x̱
m	m		xw	x̱^{w}
m'	$\dot{m}$		r	g
t	t		r'	g'
ts	c		g	ʕ
ts'	ċ		g'	ʕ'w
s	š		gw	ʕw
n	n		g'w	ʕ'w
n'	ṅ		h	h
t'	$\dot{\lambda}$		w	w
lh	ɬ		w'	ẇ
l	l		y	y
l'	$\dot{l}$		y'	ẏ
k	k		z	z
k'	k̇		z'	z'
kw	k^w		7	ʔ
k'w	k̇^{w}		a	a
c	x		e	ə
cw	x^w		i	i
q	q		u	u
q'	q̇		v	ʌ
qw	q^w			

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SPANISH EVENT INFINITIVES:
FROM LEXICAL SEMANTICS TO SYNTAX-MORPHOLOGY[1]

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1. Introduction

In this paper we examine the semantic and syntactic properties of event nominal-infinitives in Spanish, as illustrated in (1):

(1)   Le molestaba [aquel (continuo) masticar chicle de los niños].
      it bothered him that continual chew(inf) gum of the kids

Traditionally, this construction of Spanish grammar has been studied in relation to the infinitives appearing in the paradigm in (2) ((2a) being similar to (1)):

(2)   a.   Le disgustaba [el lamentar (tedioso) de sus hijos].
           it displeased him the complain-inf (boring) of his children
      b.   [El lamentarse (tanto) el marido] implica que está dispuesto a comprar.
           the complain(inf) so much the husband implies that he is willing to buy
      c.   [Esos lamentares] son poco agradables.
           those complaints are not-really pleasant

Regarding the examples in (2), analyses of Romance nominalizations headed by infinitives (Salvi 1983 for Italian; Plann 1982, Bosque 1989 and Yoon and Bonet-Farran 1991 for Spanish, among others) have concentrated on the categorial nature of the three syntactic classes of nominal infinitives above. Thus (2a) has been considered a VP-infinitive, as opposed to (2b), an S-infinitive, and to (2c), a truly

N-infinitive. Accordingly, underlying configurations have been suggested in which nominal and verbal domains co-occur, though great variety is observed in both analyses and representations.[2] The morphological as opposed to the syntactic origin of such configurations has been another point of debate (de Miguel 1996, in the line of Picallo 1991 for Catalan). Only recently have there been attempts to relate the syntax of nominal infinitives to their lexical-semantic interpretation (Zucchi 1993) or to their thematic constraints (Hazout 1994). Moreover, it is also only recently that we have the technical and conceptual means to construct a viable theory of the syntax-semantics of this class of ambiguous elements.

The lexical semantics of the construction —and the role it plays in the interface between the lexicon and the syntax-morphology— is the axis of our discussion in this work, where constructions similar to that in (1) will be analyzed in comparison with other structures projecting events, namely action nominals (see (3a) below). Thus, the theoretical assumptions underlying our analysis will also be substantially different from those used in the approaches mentioned before, which have concentrated on syntactic and morphological differences among the infinitive constructions illustrated in (2).

Structures projecting events, in general, can be grouped in different ways depending on the analysis of the internal temporal structure of the situation described by the predicate. In fact, events can be complete or incomplete, habitual or iterative or limited and punctual, among other possibilities. In this, a crucial difference can be observed between event infinitives and action nominals. In (1) and (2a), for example, the event is viewed in its developing, while the action nominal in (3a) below describes an event which is temporally delimited. Evidence for this interpretation is that with action nominals, it is possible to add a temporal adverb fixing the time (*ayer* in (3a)); furthermore, an adjective, if present, must be interpreted as descriptive attributive (*tediosa* in (3a)), and not as manner predicative, as it is the case in the event infinitive construction in (2a). The comparison between constructions like (1) (also (2a)) and (3a) will be the core of our discussion in this paper (section 2). As a matter of punctual clarification, recall that these two constructions are to be distinguished from the nominal structure in (3b), whose status is equivalent to that of the noun-infinitive in (2c) in the sense that they both represent the result of the event.

(3) a. Le disgustaba [la lamentación (*tediosa) de sus hijos ayer].
        it displeased him the complaining (boring) of his children yesterday
     b. Le disgustaban [los lamentos de sus hijos].
        it displeased him the complaints of his children

As for the theoretical assumptions underlying the syntactic analysis of constructions with event infinitives, the account developed in section 3 follows the basic tenets of Chomsky's (1995) Minimalist Program. Such an account is based on the hypothesis that these infinitives project NP's with a strong interpretable event feature, as part of the morphological specification of the infinitive head. This

(2) Proposals can also differ considerably with respect to each particular construction (cf. Zucchi 1993: 2.4. for a review of the various syntactic analyses proposed for the English gerundive nominal *his performing the song*).

(inherent) feature needs to be checked off, and as such it requires the projection of functional categories with a matching event feature, through the operation Merge, over the lexical domain of the NP infinitive. The analysis thus outlined allows us to offer a new perspective on the old issue of suppposedly "neutral" categories, which was used to account for why these constructions appear to exhibit both the verbal and nominal properties. The structure in (4) is a schematic representation of the analysis which is developed in section 3 (see also section 4 for consequences of the analysis).

(4) $[_{DP} [_{D}el] [_{FP} [_{F'} [_{F} <+e>] [_{NP} $ [los niños] [masticar-$<+e>$ chicle]]]]].

Crucially, structures like (4) contain, in addition to the event ($<+e>$) feature of the infinititive head and F, an event argument, whose existence accounts for the syntax-semantics relation. In line with a long tradition starting with Davidson (1967), we argue that events can be both singular terms refering to entities and variables to be quantified over in sentences. We propose that the readings associated to event-infinitives (namely, a concrete-existential or a habitual-manner reading, carefully analyzed in section 2) are due to the linking of an event argument (in <SpecFP>); this argument can be bound either by a existential quantifier appearing in Tense or by a generic quantifier higher than the existential one. Moreover, the fact that these nominal infinitives can incorporate the bare N internal argument explains why they are always interpreted as process events as opposed to the temporally delimited eventive reading characteristic of action nominals. The main advantage of our approach is that the analysis goes from lexical semantics (with the event feature as part of the lexical content of these heads and an event argument as part of the lexical inventory) to morphology and syntax (where the $<+e>$ feature enters checking operations), thus in line with current proposals which focus on interface relations for grammatical analysis.

2. Meaning constraints on event infinitives

2.1. On certain semantic properties

2.1.1. *Event infinitives versus action nominals*

One of the reasons why existing proposals about eventive infinitives may appear both imprecise and difficult to evaluate is that the data are not always clearly presented and contextualized. In fact, infinitives such as those in (5a), (5b) and (5c) below can be considered either factive-sentential or eventive NP's if we simply take into consideration the fact that the agent may project either in the nominative or the genitive Case.

(5)   a.   [Aquel tutearse (de) Juan y Pedro] sorprendió a todos.
            that address(inf)-each-other-as-*tú* of Juan and Pedro surprised every
            one
        b.   [Con tanto gritar (de) los chiquillos] era imposible entenderse.
            with so much shout(inf) (of) kids it was impossible to understand
            each other

  c. [El dilatar comparecencias (de) el gobierno] puede acarrear
     consecuencias molestas.[3]
     the delay(inf) appearances (of) the government may bring annoying
     consequences

In front of them, (6a) and (6b) must be taken to be "result" nominals (see
Grimshaw 1990) if we assume as diagnostic properties either the fact that the
infinitive is in the plural —(6a)— or the fact that it is lexicalized and is used as a
noun describing an object which (however abstract) can be measured —(6b).
However, (6c) is again ambiguous between a "result" reading (the song that Juana
has composed or sung) and an eventive reading (the way Juana sings):

  (6)   a. [Los andares de esa modelo] resultan muy chocantes.
            the way of walking of that model is very shocking
         b. [El poder de la clase dominante] es inconmensurable.
            the power of the dominant class is immeasurable
         c. [El cantar de Juana]...
            the song/sing(inf) of Juana

In trying to clarify the nature of the data, we will apply the traditional label of
"event infinitive" to the constructions in which the infinitive is preceded by any of
the determiners (an article, a demonstrative or a possessive) and may be followed by
a bare complement N with a *parti-generic* (Laca 1990) or *indefinite generic* (Longobardi
1994) interpretation; the Agent, Experiencer or Theme, which would be the subject
in the corresponding finite sentence, appears in the genitive Case. This is illustrated
by the structure under (7), which partly reproduces (1) and (4), for convenience:

  (7)   Le molestaba [aquel continuo masticar (*el) chicle de los niños].
         it bothered him that continual chew(inf) gum of the kids

An intuitive way of approaching the semantics of this construction is to say that
it describes events which are *unbounded activities* while non-infinitive nominalizations
(sometimes called action or 'event/process nominals' (cf. Picallo 1991) report events
which are *bounded activities*.[4] In other words, event infinitives express either concrete
or habitual non-limited activities (this is the reason why the habitual suffix *-ear*
appears often with these constituents). They contrast in this sense with regular ac-

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(3) As noted by one of our referees, some analysts (cf. Bosque 1989, among others) have said that factive
sentential (*vs.* event) infinitives rarely occur with determiners other than *el*. Besides the examples in (5), we can
furnish many other relevant examples as the one in Lapesa (1985: 346): *"N. presentó la posible victoria de sus enemigos
políticos como [otro invadir España los sarracenos]"* 'N. exhibited the possible victory of his political enemies as other
invade(inf) Spain the Saracens' or often cited *Aquel acabar su libro con la promesa de aquella inacabable aventura*
(Cervantes, *Quijote*: I,I, 51) 'that finish(inf) his book with the promise of that endless adventure', and many others
such as *Aquel haberle obligado todos a redimir su pecado* 'that have(inf) all obliged him to redeem his sin' or *Ese ser él
continuamente vigilado* 'that be(inf) he continuously watched', etc.

(4) In the literature on events there is a long tradition, starting with Vendler 1957, more recently Verkuyl
1972, Dowty 1979, Pustejovsky 1989, Tenny 1992, Jackendoff 1996, and others, which makes a distinction
between *bounded* events (alternatively, *temporally delimited, telic, accomplishments*) and *unbounded* ones (alternatively, *non-
delimited, atelic, processes*).

tion nominalizations (*destrucción* 'destruction', *quema* 'burning', *lavado* 'washing', *enriquecimiento* 'enrichment', etc.) which usually describe activities that have a beginning and an end and can yield a result, as illustrated by the different syntactic contexts able to host the two types of event nominals; compare (8a) —an event infinitive— to (8b) —an action nominal:

(8) a. Aquel corretear majestuoso de su tía {*duró toda la tarde / *comenzó hace muy poco / *ya ha finalizado}.
that majestic run-about(inf) of their aunt lasted the whole evening /started a moment ago /has already finished

     b. La preparación del pastel por su tía {duró toda la tarde / comenzó hace muy poco / ya ha finalizado}.
the preparation of the cake by their aunt lasted the whole evening /started a moment ago / has already finished

There are, then, two readings for the nominals describing events. In the case of event infinitives, the event is "a sequence of identical (sub)-eventualities" (a "process", in Pustejovsky's 1989 terminology). When the event repeats itself the habitual meaning is obtained; when the event is unique, and it has occurred at a given time or place, the reading is existential —we will come back to this double interpretation. In the second main reading —that of action nominals— an event is described in which the causation is distinct from the activity it initiates, or from the final state reached through the activation of the initial state (a "transition" in Pustejovsky's terms). It is reasonable to think that each reading corresponds to a different structure; we will come back to this issue.

The fact that activity predicates (in Vendler's classification) mainly occur in cases like (8a),[5] while accomplishments and achievements are possible in the group illustrated in (8b), is then merely a consequence of the fact that one group expresses a sequence of homogeneous (sub)-eventualities and the other denotes a branching, maybe hierarchical, relation between different states of the same eventuality. In fact, in the event described by infinitives the Agent is always implicit (Spitzer 1950: 19) and it acts in all the subevents or, in the habitual reading, in each repetition of the event. In deverbal nominals the Agent, if present, is only an adjunct[6] and the object (in the genitive Case) is a manifestation of an independent-resultant state. Compare the two cases in (9):

(9) a. El besar (*los) santos de mi abuela me llamaba la atención.
the kiss(inf) saints of my grandmother struck me

     b. El beso de la virgen (por los peregrinos) es un ritual imprescindible.
the kiss of the madonna (by the pilgrims) is an unavoidable ritual

Since the event infinitive correlates with a process and not a transition, typical transition verbs (verbs of "constructive accomplishments" —(10a)— or verbs of
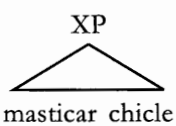
(5) The activities mentioned by the infinitives can be diverse: oral activities: *chillar, gritar, hablar, susurrar, perorar, porfiar, suplicar, tutearse,* etc, corporal activities: *mirar, gesticular, escuchar, olfatear, cantar, silbar, reír, husmear,* etc; motor activities: *correr, corretear, andar, pasear, saltar, ir,* etc; quiet activities: *dormir, bostezar, comer, respirar, vivir,* etc.

(6) In fact, an a[rgument]-adjunct in Grimshaw's (1990) approach.
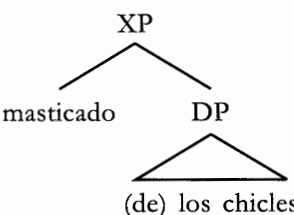
"transmission" —(10b)—) are totally impossible in the construction we are considering. As can be expected by now, achievement verbs (which only describe a resultant state, without agency) are also precluded (10c):

(10)   a. *Observé el pintar un cuadro de Pedro.
           (I) observed the paint(inf) a painting of Pedro
       b. *Me disgusta el dar de María.
           I dislike the give(inf) of María
       c. *Nos maravilló el reconocer del enfermo.
           it impressed us the recognize(inf) of the patient

In a very tentative way, and ignoring technical details which, although important, are not relevant to the development of the main points of this paper, we can formulate a conjecture as to one of the crucial differences between the two subclasses of nominals. We could think that, in the case in which the event contains an independent state, this state projects as a DP in an A-position, theta-governed by the nominal. When the event does not imply a change of state, the element in the DO position, a "bare" N, is not a referential element (it simply refers to a type or subtype) and this could be the reason why it does not project a syntactic category and it is only part of the head of XP (we will come back in 3. to the nature and internal structure of this XP):

(11)   a. *Event infinitives*   b. *Action nominals*

                XP   XP
               /__\   /   \
          masticar chicle   masticado   DP
                                                      /__\
                                                 (de) los chicles

This tentative claim implies, as is usually assumed, that lexical semantics plays a role in the syntactic behavior of lexical heads. It implies also that lexical semantics is not only a function of the verbal predicate but of the "interaction of the semantics of the verb with semantic information from the complement itself" (Pustejovsky 1995: 12). In fact, following Pustejovsky (1995: 63-64), we may distinguish among true arguments (syntactically realized parameters of a lexical item), default arguments (parameters which are not necessarily realized syntactically) and shadow arguments (parameters which are semantically incorporated into the lexical item and which are expressed only when they are in a "subtyping" relation to the shadow argument). It appears that event infinitives by themselves make only reference to the initial event (differing from action nominals which project a complex event structure). As a consequence of this event structure, when they convey events which alternatively may have a resulting state, they always carry the argument projecting this state as a shadow argument. Namely, they incorporate expressions referring to "types" (like *masticar chicle*) or subsets of material (*besar santos*). This would be the reason why only

bare N's appear in the complement context of event infinitives; this would explain also why these infinitives usually (but not always) are 'intransitive' predicates.

2.1.2. Lexical-semantic contexts of occurrence

Event infinitives appear only in s-selected positions: direct objects of transitive verbs —(12a)—, subjects of unnacusative (including psychological) verbs —(12b)—, or complements to adjectival predicates of certain well determined classes —(12c):

> (12)   a. {Escuché / oí} el rezongar de tu madre.
>   (I)-heard the grumble(inf) of your mother
>   b. El trinar de los pájaros al amanecer {me conmovía cada vez más / se prolongaba hasta las siete}.
>   the warble(inf) of the birds at dawn touched me more and more / went on until seven
>   c. Hubiera sido imaginable un lento derivar del catalanismo hacia la oposición. (*El País*, 29-xii-94: 11)
>   it would have been imaginable a slow drift(inf) of catalanism towards the opposition

These infinitives are, thus, complements to matrix verbs belonging to the class of "narrow containers" (in Vendler's 1967 terms).[7]

More precisely, the infinitive NP is either a complement of a verb of perception, giving rise to a perceptual report (Zwarts 1992, and the references therein) —*ver* 'see', *escuchar/oír* 'hear', *observar* 'observe', *imitar* 'imitate', *sentir* 'feel', etc.— or of a predicate of duration —*prolongarse* 'to last', *ser lento* 'to be slow', *frecuente* 'frequent', *rápido* 'quick', *gradual* 'gradual', *prolongado* 'lasting', *continuo* 'continous', *constante* 'constant'— (see, respectively, (12a) and (12b) above). As illustrated by the examples in (13), some factive verbs, namely, the subclass which is "emotive" or "evaluative"[8] (*divertir* 'amuse', *sorprender* 'surprise', *gustar* 'please / like', *ser agradable* 'be pleasant', *ser horrible* 'be horrible'), can also s-select the infinitive (see (12b) and (12c) above, as well as (13)):

> (13)   a. *Se divirtieron con el regatear del comprador.*
>   (they)-were amused by the bargain(inf) of the buyer

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(7) According to Vendler "narrow containers matrix predicates" select events, actions and processes, while "loose containers" select facts as well as events (1967: [5]). In other words, nominals hosted by narrow containers can only be interpreted as events or processes (they are "perfect nominals"), loose containers allow a variety of readings for the nominals, which are then "imperfect nominals". In this sense, containers "discriminate quite sharply among nominals, and, in fact, may be more informative than the grammatical shape of the nominal itself" (1967: 132). This view on the licensing of nominals is the one which informs our approach. Regarding examples of each class of "containers", narrow ones are illustrated immediately in the main text, loose ones are *possible, useful, necessary, likely, probably, certain, true*, etc. (1967: 134) as well as predicates like *mention, deny* or *remember.*

(8) Kiparsky & Kiparsky say that "[a]cross the distinction of factivity there cuts orthogonally another semantic distinction, which we term *emotivity*. Emotive complements are those to which the subject expresses emotional or evaluative reaction. The class of predicates taking emotive complements includes the verbs of emotion of classical grammar...but is larger...and include in general all predicates which express the subjective value of a proposition rather than knowledge about it or its truth" (Kiparsky & Kiparsky 1971: 363)

   b. *El mirar de la mujer es agradable.*
      the glance(inf) of the woman is pleasant

It is important to notice that these event infinitives are, so to say, specialized in the event reading, they cannot refer to "tensed events", namely to facts or propositions[9] as shown by the fact that they cannot be 'mentioned' or 'denied' (see (14a)) and do not accept paraphrases with *fact*, as the one in (14c), which should be contrasted with (14d):

(14) a. *{Mencionó / negó} el subir de los precios.
         (he/she) {mentioned/denied} the rise(inf) of the prices
      b. Le sorprendió el subir de los precios.
         (it) surprises him/her the rise(inf) of prices
      c. *El subir de los precios es un *hecho* importante del último semestre.
         the rise(inf) of prices is an important fact of last semester
      d. El subir de los precios es un *acontecimiento* importante del último semestre.
         the rise(inf) of prices is an important event of last semester

In constrast with them, action nominals have both event and fact readings depending on the meaning of the predicate selecting them:

(15) a. {Mencionó / negó} la subida de los precios. [factive reading]
         (he) {mentioned / denied} price rising
      b. Le sorprendió la subida de los precios. [event reading]
         (it) surprised him price rising
      c. La subida de los precios es un *hecho* importante del último semestre.
         price rising is an important fact of last semester
      d. La subida de los precios es un *acontecimiento* importante del último semestre.
         price rising is an important event of last semester

Coming back to the exact semantic nature of event infinitives, other studies of this construction (Falk 1969) have mentioned the "manner" reading characteristic of this construction. We would like to note that this manner interpretation —according to which *el andar de María* is interpreted as *la manera de andar de María* 'the way Mary walks'— is only found when the matrix predicate is an emotional factive one (Varela 1977), in Kiparsky & Kiparsky's extended sense of (emotional) factivity.[10] Observe the contrast between the sentences in (16): in (16a) the infinitive is concrete —it refers to an eventuality while occurring—, whereas in (16b) the same circumstance is interpreted as the way the event usually develops:

(9) Cf. Vendler 1967 and more recently Zucchi 1993 for this important distinction.

(10) See footnote 8 above. In this view factivity implies evaluation of both truth condition and the subjective reaction (in front) of an event. Individual level predicates such as *ser lento, monótono, dulce* 'to be slow, monotonous, sweet' (*El sonar de las campanas era triste* 'the ring(inf) of the bells was sad', *El zumbar de las abejas es monótono* 'The buzz(inf) of bees is monotonous', similar to our (13b)) are then emotional factive predicates. We owe the examples above to one of our referees.

(16) a. {Escuché /escucho / oigo} (cada mañana) {el susurrar de los
           bosques / el perorar de mi vecina / el bostezar de mi hija / el
           regatear del marido / un / el teclear de dedos}.
           (I)-heard / hear (every morning) the rustle(inf) of the forests / the
           spout(inf) of my neighbour / the yawn(inf) of my daughter / the
           bargain(inf) of the husband / the/a tap(inf) of fingers
      b. {Me molestó / molestaba / molesta} {el susurrar de los bosques
           /el perorar de mi vecina / el bostezar de mi hija / el (desconfiado)
           regatear del marido /(*un) /el teclear de dedos}.
           it bothered / bothers me the rustle(inf) of the forests / the
           spout(inf) of my neighbour / the yawn(inf) of my daughter / the
           (distrustful) bargain(inf) of the husband /(a)/the tap(inf) of fingers

We have, in summary, a double paradigm for eventive infinitives: perceptual
report predicates associated to an *existential reading* of the infinitival-NP, and matrix
factive psych-verbs that trigger the *manner reading* of the infinitive. It is in the context
of the manner reading where we most commonly find aspectual adjectives leading to
the habitual reading of the action —e.g. *constante, frecuente, continuo, incesante, prolongado*
or *sucesivo*—. Now, when the habitual reading is superimposed over the manner one,
concommitant tense/aspectual restrictions appear on the matrix verb:

(17) {Me preocupa /*preocupó} {el constante susurrar de los bosques / el
      frecuente perorar de mi vecina / el incesante bostezar de mi hija / el
      teclear de dedos}.
      it worries / worried me the constant rustle(inf) of the forests / the
      frequent spout(inf) of my neighbour / the incessant yawn(inf) of my
      daughter / the tap(inf) of fingers

Parallel to the temporal restriction, the manner / habitual infinitive governed by
an emotive predicate cannot be introduced by an indefinite determiner, see (18a)
which contrasts with the perceptual report under (18b):

(18) a. *Un mirar de la mujer/mujeres es agradable.
           a glance(inf) of the woman/women is pleasant
      b. El/un lejano aullar de lobos le llegaba entre sueños.
           the/a distant howl(inf) of wolves came to him in (his) dreams

It should be noted that the mere occurrence of aspectual adjectives does not
establish a categoric distinction between "manner" and "existential" readings since
these adjectives are also compatible with perceptual report structures leading to the
existential interpretation of the eventive infinitive:

(19) a. Veo cada mañana el prolongado ascender del sol.
           I see every morning the slow rise(inf) of the sun
      b. Se oye a lo lejos el continuo ladrar de los perros.[11]
           one can hear, in the distance, the continuos bark(inf) of the dogs

_____

(11) We owe the examples and the previous observation to one of our referees.

Now, it is important to note that, in examples like the preceding ones, the aspectual adjectives determine an iterative reading of the nominal, not a habitual one. More specifically, the nominals in (19) refer to a set of occurrences of an act, activity or event over the *same single occasion* or situation. They contrast in this sense with the cases in (16b) and (17) where the adjectives, together with the nominals, describe an event occurring in a certain manner *on different occassions*. In other words, although both, iterative activities and habits, involve repetitions, iterative events refer only to one occassion while habits make reference to multiple occassions as well as to multiple events.

2.2. Existential and habitual binding

To account for this intriguing set of properties we will assert that in the sentences with a concrete or existential infinitive —(16a) or (18b), for instance— there is an existential quantifier that binds the event variable in the infinitival DP. Let us assume, following Kratzer (1989), that only stage-level predicates, but not individual-level predicates, have an event argument and that the event argument of the verb corresponds to a variable over events in a semantic representation where the VP/DP is the predicate applying to this variable.[12] We will also assume that the semantics of T(ense) includes two components: a temporal predicate that locates the event in relation to a speech time and/or reference time, and an existential quantifier binding the event variable. In this frame, the referential event expressed by the existential infinitive will be the result of the existential quantification over the event argument in the infinitive, as represented in (20):

$$(20) \quad [_{TP} [_{T'} T\exists_i [_{VP/DP} ...Ve_i...]]]$$

It is important to observe that verbs selecting this subclass of eventive infinitives (verbs of perception and certain duration verbs) are themselves individual-level predicates.[13] Due to their intrinsic nature, they do not have an e-argument. It is for this reason that the operator variable relation is established with the referential e-argument in the infinitive, also under the scope of the quantifier in T in the main

(12) Davidson (1967) was first in postulating the existence of an event argument. Since Davidson many authors have developed different articulations of this hypothesis: Higginbotham (1985) postulates a theory of e-argument binding in nominals, Hegarty (1991) and Zwart (1992) argue that the existential quantification of the event variable obtains through binding of the event by T.

(13) We assume, following usual lines (recall Diesing's 1992 observation —4.4.5.2 that experiencer verbs are individual level predicates) that perception verbs with Experiencer subjects such as *ver* 'see' or *oír* 'hear' are individual-level predicates. In contrast, agentive perception verbs like *escuchar* 'listen' or *mirar* 'look at' could be stage-level predicates. (The class of perception verbs have been studied by Rogers (1971). He claims, as well as other analysts, that there are neutral uses of both classes of verbs, the unmarked forms being those with Experiencer subjects: the individual level perception predicates, in our terms). Observe, in this sense, the contrast between the two following cases:

(i) ??Mirábamos (fijamente) cada mañana el descender de las aguas.
    we were looking at (fixedly) every morning the fall(inf) of the water
(ii) Veíamos (*fijamente) cada mañana el descender de las aguas.
    we were seeing (fixedly) every morning the fall(inf) of the water

clause.[14, 15] This analysis extends to non-infinitive eventive nominalization like those in (15b) and (15d) (recall also: *La decadencia del imperio romano comenzó en el siglo I A.C.* 'Roman Empire's decay started in the first century B.C', *Me deleité con la actuación de Berganza* 'I was delighted by Berganza's performance'). We also claim that action nominals with a factive reading, like (15a), (15c) and similar ones, do not project an event argument.

In the other subclass of manner infinitives ((16b) or (17), for instance) a habitual operator (sometimes explicit: *frecuente, incesante,* etc.)[16] binds the event in the infinitive. From the presence of this habitual operator, the manner reading could perhaps be derived. As a matter of fact, the manner of an action can be traced back to its being habitual if we assume, in line with Zwarts, that habituality "is a shift from a set of events or processes to a *generic* state" (1992: 136). Comrie (1976: 27-28) also claims that a "feature that is common to all habituals... is that they describe a situation that is characteristic of an extended period of time". The manner reading, then, would not be an implication but an implicature of the "habitual" interpretation.

It is difficult to derive from our analysis the impossibility of an indefinite determiner such as *un* 'a' (recall (16)) with this type of infinitive, given that indefinites can be also bound by the habitual operator (*Un perro siempre acompaña* 'A dog is always company'). However, an important parallelism can be observed. In fact, verbs inducing the existential reading of the infinitives (*mirar, observar, escuchar, oír, ser lento / frecuente*) are verbs which create referentially opaque contexts. In the context of these verbs, NP's introduced by the indefinite are usually ambiguous as to their specificity (—*¿Qué haces?*, —*Oigo una canción* '—What are you doing?, —I'm listening to a song' [this 'song' can be any song or a certain song]). On the contrary, psych-emotive verbs inducing the habitual reading of event infinitives (*me perturba, encanta, molesta*) are predicates which force the specific reading of a noun. For this reason, they do not usually allow indefinite NP's (—*¿Qué te pasa?*, —**Me molesta* una *canción* vs. *Me molesta esta canción* '—What's wrong?, —A song bothers me vs. This song bothers me'). It could be the case that the same fact that disallows indefinites with current nouns will also play a role in precluding their use with event infinitives. The absence of indefinites would then be a matter of specificity not of habituality.

Still in need of clarification is the status of the habitual operator with regard to the existential quantifier in T. As we have noted, verbs selecting this class of infinitives are terms denoting psychological states of emotion (*anger, pleasure, distress*). Diesing has observed that such predicates "seem to be stage-level in that they describe transitory states" (1992: 42).[17] Now, if we adopt this view of psychological

(14) Moreover, in cases like this the relation between T and the main verb in the sentence will not be an operator-variable relation. Zwarts (1992: 131) claims that "in this case the Tense predicate of I is directly applied to the VP and not to the Event-argument".

(15) Alternatively, one might attribute the existential interpretation of the event to the article obligatorily present in the construction. Note, however, that the article does not appear to act as an operator providing a range to a variable (see Longobardi 1994 for this property of determiners) because the infinitive is not a name that refers to a kind. The article, moreover, does not make any contribution to the semantics of the construction: it is just a marker of argumenthood, or a nominalizer. We will come back to this issue in 4.2.

(16) We will not enter into the discussion whether the habitual operator is a quantifier or a sentential operator. See Zwarts 1992, especially Chapter 5, in regard to this.

(17) Diesing also observes that when syntactic and semantic tests meant to prove membership in any of the two classes of predicates are applied to verbs describing states of emotion they seem to occur in the category of

state predicates we will have to say that the existential quantifier in T binds the event variable in the psychological verb. In this context, existential closure will not apply to the governed infinitive as is the case when the matrix verb is an individual level predicate (namely, when the predicate is one of perception). Furthermore, if we assume, à la Diesing, that the generic quantifier is higher than the existential one, we will need to claim that, at LF, the infinitive moves covertly in order to be locally bound by the habitual operator, perhaps by adjoining to it. Alternatively, we could think that this habitual operator is a VP or an S operator which is part of the projection of the emotive psych-verbs which govern manner infinitives.

Summarizing, in this section we have shown that the class of event infinitives contrasts sharply with that of deverbal nominals from the semantic point of view. In action nominals, a complete process is denoted and the linking of the result of a "transition" is the main feature of the construction; eventive infinitives denote "processes" in the course of their development. Moreover, while eventive infinitives are selected only by predicates which evaluate subjective reaction or report perception and duration, action nominals can also be selected by predicates which evaluate truth condition. After this characterization, we have set apart the contexts in which event infinitives appear, and we have found two subtypes of them: those which express an existential or concrete event and those which refer to a habitual activity. We derive this distinction from the relation between the semantic class of the matrix verb and the way the quantificational binding of the event argument, present in the stage-level infinitive predicate, takes place.

3. A functional event-head and the syntax of nominal infinitives

3.1. The feature content of event infinitives and its syntactic implications

The aim of this section is to put forward a proposal concerning the syntax of event infinitives within the framework of the Minimalist Program. Our basic intuition is that certain aspects of the syntax of this construction can be traced back to the lexical semantics of the infinitival element. As expected, independently needed syntactic principles crucially contribute to the final form of event infinitive structures.

Our hypothesis is that constructions with event infinitives are basically projections of a nominal infinitival head, i.e. NP's formed by Merge (following Chomsky 1995). A bare noun may incorporate into the infinitive head in the case

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individual level predicates. After a closer look, Diesing concludes that they are at least ambiguous. We will disregard this ambiguity —as a way of idealizing this complex set of facts— and we will consider them as stage-level predicates.

of event infinitives derived from transitive verbs, thus forming a complex predicate (see (11a)). Following the restrictive theory of syntactic projection from the lexicon proposed by Baker 1988 and Chomsky 1993, 1994/1995, among others, we will assume, first, that the bare noun in the internal or complement domain of the lexical infinitive —*chicle* 'chewing gum' in (1) and (4)— is structurally licensed through incorporation to the sister head, thus building a complex phrase. This incorporation which takes place in the overt syntax is a process similar to the one forming deverbal synthetic compounds where "a word in first sister position" (Roeper & Siegel 1978: *First sister principle*) is incorporated into the verb (cf. also Masullo 1996). This incorporation, which obviously takes place only when the infinitive is lexically a transitive verb, is the way for "event-processes" projecting into the syntax (see 4.2. below for further clarification).

The feature content of nominal infinitives is unlike that of other nouns in that one of the features associated with the inflectional infinitive morphology is an event feature which is strong and interpretable. Being strong, this feature will have to be checked off before spell out. The existence of this [e] feature, which must obligatorily enter a checking operation as part of the morphological specification of the nominal infinitive, requires minimally the projection within the functional domain over the NP of a functional head with an equivalent [e] feature against which that of the nominal can be checked. For the purposes of exposition, we will call this functional head F_1, since it is not necessary at this moment to be precise about the exact content of this head (but see 3.1.1). Once F_1 has been introduced into the structure (through Merge), this projection will "expand" in two ways: (i) the (complex) lexical N adjoins to this F_1 to check off its strong [e] feature which then undergoes deletion; (ii) an *e*-argument —the variable to be bound by the existential or habitual quantifier— merges now into the Spec of the phrase headed by the functional head and it is licensed through Spec-head agreement with the functional head.[18] Assuming Chomsky's (1995: 281) claim that "features of the target are always -Interpretable" and that features may be deleted (checked but visible at LF) and/or erased (checked but invisible at LF) depending on whether they are +Interpretable (deleted, but not erased) or -Interpretable (deleted, and possibly, i.e. parametrically, erased), it is possible within the Minimalist Program to provide an account for why a feature may enter two checking operations. Our hypothesis is that the [e] feature of F_1, though -Interpretable, undergoes deletion, but not erasure, after adjunction of the nominal infinitive head for checking purposes and, thus, is able to check the [e] feature of the *e* argument which has been introduced through Merge in the position of Spec of FP_1.[19] The whole process is represented in (21).

(18) Perhaps, in a merely stipulative way, we are assuming that the numeration contains an *e* argument in the same way as it also carries empty categories. To the extent that this argument is equivalent to spatio-temporal arguments (locative subjects and similar elements), our assumption may be considered tenable.

(19) This idea was suggested to us by Amaya Mendikoetxea.

(21)
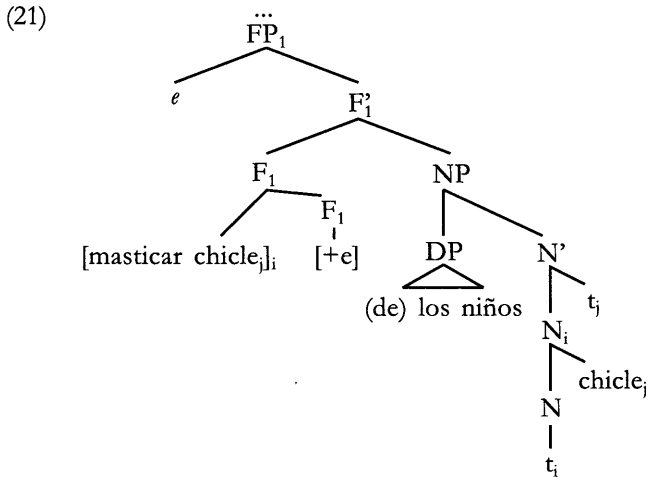
A remaining question is how genitive Case is assigned to *los niños*, the subject of the infinitive in (21). One possibility is to think that this DP moves at LF to a designated functional projection where this Case, is checked off. We can postulate also that genitive Case, being an inherent Case, is checked straightforwardly with the selecting head.

There are various questions which need to be answered in order to make this general proposal more tenable. An important first one is which is the status of the infinitive marker or, more strictly, what is the relation of our proposal with previous convincing analyses claiming that the infinitive marker is a syntactic nominal affix and that category is assigned by a functional head (Picallo 1991). A second one is which is the "content" of F_1. The third one is to what extent this analysis can apply to action nominals, an issue that we will approach briefly in 4.1. Let us go then through the first two questions.

3.1.1. Until recently, a standard idea (Chomsky 1970) was that certain lexical items appear in the lexicon with a neutral categorial specification. In analyzing nominals and nominalizations, Picallo 1991 asserts "that some lexical elements may be considered to enter in the lexicon with fixed selectional features, but are neutral with respect to the categorial features [+/–N],[+/–V]. Categorial features will then be assigned by morphological rules. Implementing this hypothesis, in current terms, we propose that the label NP is assigned in the syntax by applying head adjunction in the lower cycle..." (1991: 298). In the spirit of Chomsky 1970 and Picallo's 1991 idea that categorial features are assigned morphologically, but with a different implementation, we claim now that in the projection of this type of nominals there is no VP or any other "neutral category" at any moment (the idea of neutral categories does not appear to be compatible with regular minimalist assumptions about categorial information), only a lexical N infinitive with its DP "subject" —sometimes, also with its incorporated complement. This lexical element, as an intrinsic property of the inflectional nature of the infinitive, carries an event-feature and nominal features such as reference and case. These

features, as we have said, induce merging of functional heads in the checking domain of this nominal. What underlies our proposal then is the idea that what is in fact "category neutral" is the event feature, since it can occur both as part of the morphological specification of a N or a V. We believe this assumption not to be a mere stipulation but simply an empirical fact; as stated by Davidson: "Events correspond to singular terms...and are [also] quantified over in sentences...; facts correspond to whole sentences" (1967/1980: 135). To be more explicit, the event feature is an intrinsic feature similar, perhaps, to count/-count and it differs from categorial and Case features.

3.1.2. As to the exact nature of FP_1, in a recent interesting proposal, De Miguel 1996 claims this functional phrase to be an Aspect Phrase whose head is specified as [-perfective]. It appears to us, though, that Aspect, if it can actually be considered as a functional head, is a candidate to be a head over a verbal lexical domain and not over a nominal one. Since the lexical aspect (the *Aktionsart*) is deeply related to the temporal internal structure of events —which is "measured out" (Tenny 1987, Jackendoff 1996) by the internal argument, and by certain adverbials and other elements which contribute to the composition of telicity—, Aspect appears to be a verbal feature. So we prefer to leave this matter open here.

3.2. A further movement

It appears, finally, that the N infinitive adjoined to F_1 has to move itself to check other features, e.g. Case features; observe (23). In order to achieve this, it will move to an FP_2 intermediate between DP and FP_1. If the reason for movement were Case checking, this FP_2 would be a KP similar to that proposed by Giusti 1992; another possibility would be to consider FP_2 as an Agreement Phrase in which certain agreement features of adjectives are checked against those of the N. In any of the two alternatives, the head N adjoins to the (empty) head of the FP_2. It is relevant to note, though, that the Spec of this FP may be occupied by an adjective. This supposition is in line with the usual view on adjectives according to which they generate in the Spec of different functional projections within DP (Cinque 1992, Bosque & Picallo 1994, among others); we will come back to these issues in section 4.

An empirically obvious reason for this mechanics is that the adjective always precedes the infinitive when occuring with the bare noun, (22a), while the subject always follows the complex predicate, (22b):

(22)   a.   El continuo prestar discos de María.
            the continual lend(inf) records of María
       b.   *El continuo de María prestar discos.
            the continual lend(inf) of María records

(23) is a complete representation of the proposed derivation:

(23)

```
              DP
             /  \
           el    FP₂
                /  \
         continuo   F'₂
                   /  \
        masticar chicleᵢ  FP₁
                         /  \
                        e    F'₁
                            /  \
                          F₁    NP
                          |  F₁  / \
                          |  |  DP  N'
                          |  [+e]  |   \
                          tᵢ       |    tⱼ
                               (de) Juan  Nᵢ
                                        | chicleⱼ
                                        N
                                        |
                                        tᵢ
```
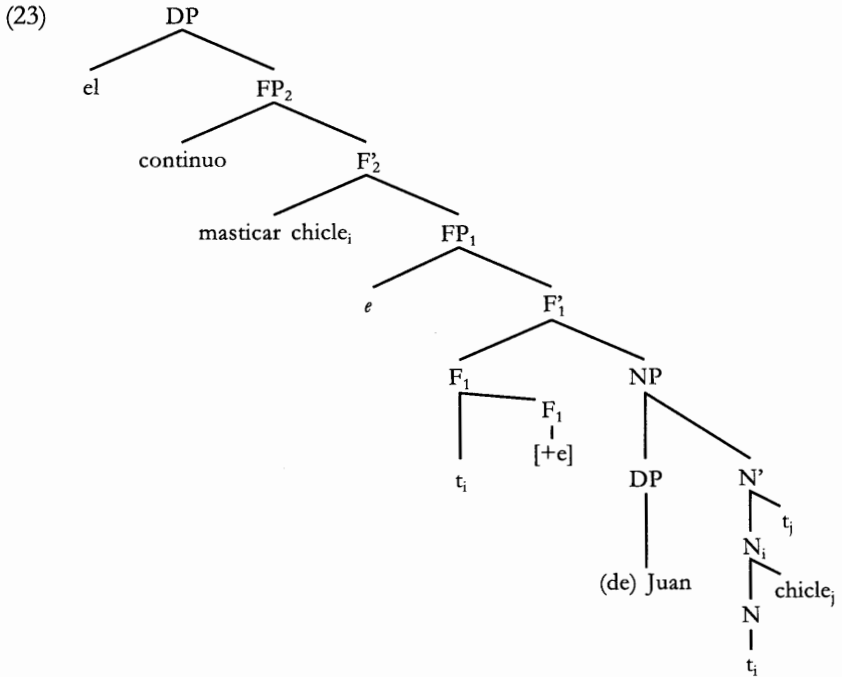
In the following section, the proposal will be more precisely articulated and we will explore the predictions made by the preceding analysis.

4. Adjectives, incorporation, negation and accusative clitics in event infinitives. Some consequences of our proposal

4.1. Adjectives and predicatives

4.1.1. Manner adjectives

We have said that modifying adjectives always precede the infinitive. This observation needs to be qualified. First of all, not all kinds of adjectives can precede an infinitive. Furthermore, adjectives do follow the infinitive under certain conditions. We will discuss these two points.

Leaving aside the various kinds of adjectives whose occurrence in this construction is precluded by semantic reasons (namely, qualifying and certain relational adjectives which modify only concrete entities: *blue* or *electric*, for instance: *the blue / electric oven* — **the blue / electric invasion*), we would expect to find certain thematic relational·adjectives (Bosque & Picallo 1994) like *Italian* and many adverbial adjectives, which also occur as modifiers of eventive nominalizations. (24) illustrates modification of event nominals by these various subclasses of adjectives: (24a) is a relational adjective linking the external argument of the nominal (Giorgi & Lon-

gobardi 1991), (24b) and (24c) —both examples taken from Crisma 1993— are, respectively a speaker-oriented and a subject-oriented adjective:

(24)   a.   the Italian invasion
       b.   la evidente provocazione di Gianni (=it is evident that Gianni is
            provoking somebody)
            the evident provocation of Gianni
       c.   L'intelligente rinuncia di Gianni (a candidarsi alle elezioni).
            the intelligent refusal of Gianni to run for the elections

None of the three kinds of adjectives appear with event infinitives:

(25)   a.   *Me dejó perpleja el {provocar / reaccionar} italiano. (cf. Me dejó
            perpleja la {provocación / reacción} italiana).
            it astonished me the provoke(inf) / react(inf) Italian
       b.   *El {evidente / lógico} regatear del cliente no nos sorprendió. (cf.
            El evidente / lógico regateo del cliente no nos sorprendió).
            we were not surprised at the evident / logical bargain(inf) of the
            customer
       c.   *Fue muy prolongado el inteligente deslizarse de María hacia el
            otro grupo. (cf. Fue muy prolongado el inteligente deslizamiento de
            María hacia el otro grupo).
            it was very long lasting the intelligent slip(inf) of M. to the other
            group

In fact, the generalization that we would like to capture is given under (26):

(26)   a.   Only manner adjectives co-occur with eventive infinitives.
       b.   When an adjective follows the infinitive, it is a predicative AP.

(26a) follows from our proposal. Since the morphological features of this NP are not exactly the same as those carried by NP's headed by nouns referring to entities, we do not expect all the Agr(eement) heads usually intervening between DP and NP to merge in this case. Furthermore, if we follow Cinque's 1993 and Crisma's 1993 hypothesis about the paralellism between adverbs and adjectives, and claim that adjectives are generated in the Spec of functional categories in an order such as the one in (27) (from Crisma 1993), we can infer why in (25) there is no place for subject-oriented or speaker-oriented adjectives.

(27) $[_{DP} [_{FP2} [\text{subject/speaker o.}] [_{FP1} [\text{manner}] [_{NP} [\text{ext.arg}]]]]]$

In fact, if current hypotheses about parallelism between DP and IP are correct, the grammaticality of (24) may derive from the fact that deverbal nominals correlate semantically with whole sentences (they are propositional and/or factive, and they have Tense as shown by their acceptance of temporal adverbial adjuncts: *Me sorprendió la caída del dólar ayer* 'It surprised me the falling of the dollar yesterday') and for this reason they project a set of functional categories different from the ones projected by eventive infinitives, which are neither propositional nor factive (as we expect to have proved): they are only event denoting. In the same line of reasoning,

it is interesting to observe that action nominals which accept both manner and speaker/subject oriented adjectives do not ever accept both kinds at the same time (cf. (28a) an eventive nominalization and (28b) a factive nominal), although a speaker oriented and a subject oriented can cooccur (cf. (28c)):

(28)   a. El (*seguro) lento regreso de los exiliados a su tierra comenzará mañana.
           the (sure) slow return of the exiles to their native-country will start tomorrow
       b. Negó el probable (*continuo) regreso de los exiliados a su tierra.
           (he/she) denied the probably (continous) return of the exiles to their native-country
       c. El evidente seguro regreso de los exiliados a su tierra conmoverá a las almas sensibles.
           the evident sure return of the exiles to their native-country will move sensitive souls

This suggests that FP_2 (which can have an AP in the Spec position, see (23)) hosts one of the morphological features distinguishing event nominals (either infinitives or derived nominals) from factive nominalizations whatever this difference turns out to be.

Concerning the non occurrence of ethnic and similar adjectives, we can conjecture that the ethnic adjective cannot be linked because the Spec position of the infinitive affix is occupied by the external e-argument.

4.1.2. Predicative AP's

Even though the adjectives which are compatible with event infinitives are manner adjectives, these infinitives, unlike sentential ones, do not co-occur with manner adverbs:

(29)   a. El golpear María reiteradamente la puerta indica que ha sucedido algo.
           the knock(inf) M. repeatedly the door indicates that something has happened
       b. *Me llamó la atención el bostezar reiteradamente de María.
           it struck me the yawn(inf) repeatedly of María

This indicates first that infinitives do not have the syntactic properties of VP's (they do not have the functional verbal agreement projections to which adverbs are adjoined or merged) and, second, that they are syntactic NP's. However, incorporation of an adjective to the infinitive head can proceed in the same way as incorporation of a noun, namely, they can make a complex N incorporating a predicative A since the adjective following N is a subcategorized predicative A. The first piece of evidence in favor of this idea comes from the fact that the set of adjectives preceding N is larger than the ones that follow it. In (30a) and (30b) the asymmetry between the two sets of adjectives is illustrated; (30c) shows that in certain cases only postponed adjectives are allowed. This is due to the fact that the meaning of the adjective is only compatible with a strong manner interpretation:

(30) a. El (constante) trepidar (constante) de la lluvia me sorprende.
          the constant shake(inf) of the rain surprises me
      b. El (odioso) rechinar (*odioso) de la máquina duró toda la noche.
          the annoying clank(inf) of the machine lasted all night
      c. El (*decidido) hablar (decidido) de la profesora nos dejaba
          perplejos / El (?pausado) formar (pausado) de los veloces
          trenes...[Azorín]
          the determined talk(inf) of the professor astonished us / The slow
          line-up(inf) of the fast trains

Our second piece of evidence is more intricate. In the literature on Romance languages, a subclass of secondary predicates has been attested• which does not fit exactly into any of the standard groups of depictive and resultative predicative AP's. We refer to the elements termed "advectives" by Napoli 1975, as exemplified in (31):

(31) a. Giovanna parla chiaro. / María habla claro.
          Giovanna speaks clear / María speaks clear
      b. La presidenta habló lento.
          the president spoke slow

This set of adjectives, which can also be manner ones, behave as secondary predicates (more exactly, as depictive subject-oriented secondary predicates [DSOSP]): they are stage-level adjectives and semantically they describe the state in which the subject is throughout the development of the verbal action. However, they have to be set apart from DSOSP because they have different formal properties: they do not agree with their subjects. In Spanish, they are invariably singular and they appear in the unmarked gender form. In addition, it is crucial for our proposal to observe that, in contrast with regular depictive SOSP, they are not compatible with direct objects:

(32) a. La soprano cantó el lied apasionada.
          the soprano sang the lied fervent
      b. La soprano cantó claro. / *La soprano cantó el aria claro.
          the soprano sang clear / The soprano sang the aria clear

This contrast strongly suggests that advectives occupy the syntactic place of the DO[20] and, similarly, they are also incorporated into the verb. Similar properties are

(20) An apparent counterexample to this observation (provided by one of our referees) is sentence (i) where the advective cooccurs with the DO and precedes it:

(i) Esta profesora puntúa bajo los exámenes.
     this teacher grades low the exams

We assume that *puntuar bajo* is a kind of compound verb, or complex predicate, given the neat contrast with the case in (ii):

(ii) ??Esta mujer dice claro las cosas.
      this woman says clear(ly) the things

Now, both (i) and (ii) become acceptable when the adjectives appear dislocated and modified by an intensifier:

exhibited by the adjectives following the infinitives in the construction considered. (33b) shows that the adjective cannot be interpolated between the verb and the DO and cannot follow them either. (34) has this subcategorized constituent in a right-dislocated position, to which it has been moved:

(33)   a.   Me disgustó el continuo beber vino de Juan.
            it displeased me the continual drink(inf) wine of Juan
       b.   Me disgustó *el beber vino continuo / *el beber continuo vino / el beber continuo de Juan.
            it displeased me the drink(inf) wine continual / the drink(inf) continual wine/ the drink(inf) continual of J.

(34)   Un doble reír, caído y cansado, expresó desde el suelo el femenino rendimiento. (Juan Ramón Jiménez)
            a double laugh(inf), fallen and tired, expressed from the floor the feminine surrender

4.2. Indefinite genericity and the unclear existence of VP-infinitive NP's

As we mentioned earlier, usually only bare (plural or singular) direct object NP's are found in this construction:

(35)   a.   El reiterado construir *carreteras* del gobierno llevó al deterioro de ciertas zonas (*vs* *El construir las carreteras del gobierno...)
            the stubborn build(inf) roads of the government led to deterioration of certain zones
       b.   Admiro su continuo tomar / beber *leche* para prevenir la osteoporosis (*vs* *Admiro su constante beber la leche...)
            I admire her continual drink(inf) milk to prevent osteoporosis

As opposed to English, Spanish bare plurals are never generic NP's. However, they share with most English bare objects the property of not being bound by a universal quantifier and having narrow scope.[21] In other words, Spanish bare objects refer to a kind but they cannot refer to a stable group of representatives of a given

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(iii)   a.   *Esta profesora puntúa los exámenes muy bajo.*   b.   *Esta mujer dice las cosas muy claro.*

These restrictions could suggest that in (iii) we are not dealing with predicative AP's but, rather, manner adverbs. Note, finally, the contrast with predicative AP's affecting deverbal nominals. Leonetti & Escandell 1991 give examples of subject-oriented predicative AP's with certain deverbal nominals, as in:

(iv)   *Su (=de Juan) aparición borracho.*   (v)   *Su paseo por el parque descalza.*
       his appearance drunk   her walk along the park barefoot

Similar constructions with eventive infinitives are ruled out unless the incorporated predicative AP follows the infinitive:

(vi)   *El pasear (de María) descalza* vs. *El pasear descalza de María.*
(vii) *El perorar de Juan borracho* vs. *El perorar borracho de Juan.*

(21) A subgroup of English bare objects, namely, those selected by affective attitude predicates (*hate, love, loathen*), can also be generic: *John loves chocolate cookies.*

species. In tensed sentences, however, bare objects, even though not referring to particular individuals can receive an existential interpretation. According to Longobardi 1994 this existential interpretation is assigned, by default, by an empty D(eterminer) operator which ranges over kind-referring common nouns. What is the syntactic and semantic status of the bare N's underlined in constructions such as those in (35)?

We have claimed that the internal N arguments in event infinitive constructions are licensed through incorporation to the infinitive head. Now, such an incorporation is possible due to the intrinsic semantics of common nouns (a part, indeed, of the semantics of bare plurals). Not being designators of particular individuals, these N's can incorporate precisely because they are not referential DP's. Rather, they are kind-referring N expressions not bound by the operator which would be instantiated by the definite determiner (Longobardi 1994) when the N in question occurs in a governed syntactic environment. As mere denotational expressions, these bare N's modify the event described by the infinitive which thus becomes un-bounded.[22]

We are also claiming, as a consequence, that event infinitive constructions are truly nominal and thus do not appear in the structure within the domain of functional verbal projections. Interesting evidence which confirms this last proposal comes from the behavior of clitics. Accusative clitics are unacceptable with these infinitives, while reflexive or inherent clitics do occur with them:

(36) a. *Tu decir*lo* me sorprende. *(vs.* El decirlo tú me sorprende.)
          your say(inf) it surprises me
      b. Tu continuo desdecir*te* me indigna.
          your continual retract(inf) yourself makes me mad
      c. Ese tutear*se* continuo e inesperado de ellos dos me parece sospechoso.
          that address(inf) each other as 'td' continual and unexpected of them two seems suspicious to me

These facts are consistent with our approach. These clitics (like the *se* clitics in verbal projections, which are generated within the VP (cfr. Raposo & Uriagereka 1996)) may incorporate to the infinitive in the lexicon and are projected in the syntax as part of the NP. Accusative clitics —which are supposed to head a

(22) It is interesting to note that event infinitives do not license control structures:

(i) Oíamos el cantar de las sirenas (*para atraer a Ulises).
     (we) were listening the sing(inf) of the mermaids (to attract Ulises)

This property opposes them, again, to eventive action nominals where control is possible:

(ii) La demolición del puente por el gobierno (para ganar votos)
      the demolition of the bridge by the government (to obtain more votes)
      El canto de las sirenas (para atraer a Ulises) era emocionante
      the sing of the mermaids (to attract Ulises) was moving

Given that only arguments can be controllers, this contrast suggests a central difference between the two structures concerning the syntactic projection of their respective argument structure. However, we will leave this matter open here.

functional verbal projection, perhaps the AGROP— do not become a part of the infinitive predicate.

Another consequence of this proposal is that it implies that VP-infinitival NP's simply do not exist in Spanish. Following the classical analyses for English gerundive nominals, Zucchi analyzes as VP-infinitival NP's such Italian constructions as those in (37):

(37) a. Gianni appreza il tuo eseguire la sonata.
          Gianni appreciates the your perform(inf) the sonata
      b. ...il suo continuo partire improvvisamente...
          ... the his continual leave(inf) suddenly
          [apud Zucchi 1993: 255 and 232, respectively]

We believe that similar constructions are not found in Spanish and that in all of the cases where either an adverbial or a definite DO, or both, occur inside an infinitive construction a nominative subject can also be recovered within the same syntactic environment.

In a parallel way, we believe that, in certain cases in which the genitive complement of an apparently ambiguous infinitive appears to be a candidate for interpretation as a DO, we are actually dealing with a lexically derived subject:

(38) el hundir de costillas, el rebanar de miembros, el trinchar de entrañas...
      el distribuir del botín. (Mujica Láinez)
      the oppress(inf) of ribs, the slice off(inf) of limbs, the carve(inf) of
      entrails...the distribute(inf) of the booty

Positive evidence for this suggestion comes from the fact that only verbs entering into the causative-inchoative alternation appear in structures similar to (38). In addition, lexical inchoatives (namely, verbs which are lexically ambiguous between the two interpretations) when appearing in this construction accept only the reading in which the genitive is the subject:

(39) el hervir de la leche, el crecer de las plantas, el caer de la lluvia.
      the boil(inf) of the milk, the grow(inf) of the plants, the fall(inf) of the rain

4.3. Negation

Eventive non-finite nominals differ both from action nominals and propositional/factive infinitives in disallowing sentential negation and focus operators like *sólo*. Compare (40a) to (40b), an action nominal:

(40) a. *Escuchaba el no / solo cantar de María.
          he/she-listened to the not/only sing(inf) of María
      b. La no / sola injerencia en asuntos externos es (des)aconsejable.
          the no /only interference in business external is (in)advisable

Negation and focus operators are normal in sentential factive infinitives (observe (41)):

(41)   Con sólo reír (ellos) los expulsan de clase.
       with just laugh(inf) (they) they are expelled from the classroom

In so far as negation and focus operators project higher than TP in a sentential complex, (40a) and (41) suggest a categorial distinction between both classes of nominal infinitive constructions. What remains to be determined is whether the nonfinite clausal structure in (40b) is an IP or a CP. We will leave this question open in this work.

In sections 3 and 4, we have discussed the syntax of eventive infinitives. We have shown that the structures in which they occur are formed by incorporation of the complement into the infinitive nominal head, and the introduction (through Merge) of a functional event head against which the interpretable strong feature of the infinitive is checked off. It is on this event head where an event argument gets licensed through Spec-head agreement. This syntactic analysis relies crucially on a minimalist approach to the computational system deriving natural language sentences. Our account makes clear, we think, that the problematic question of the supossedly ambiguous categorial status of certain constructions is just apparent. In fact, if we assume that the set of morphological features carried by so called categorial nouns are not identical in all cases, we can dispense with the debate on the head categories intervening in the formation of this construction and we will also explain deep properties of this construction as well as its relation to other similar categories, for instance, event/process nominalizations. Concerning the empirical import of our account, we have provided crucial properties distinguishing eventive infinitives from action nominals. The analysis we have proposed leads to the suggestion that —at least within the parametric choices for Spanish grammar— there is no basis for a formal distinction between a VP-infinitival NP and an N-infinitival NP. Our account implies, finally, that the syntax of infinitives is driven by their semantics, their nominal condition being linked to the fact that they project an event.

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FEATURE LICENSING, MORPHOLOGICAL WORDS, AND PHONOLOGICAL DOMAINS IN BASQUE

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1. Introduction*

In this paper we analyze the phonological process of Vowel Assimilation in Lekeitio Basque (henceforth VA and LB, respectively).[1] VA is a process in which a vowel assimilates in all its features to an immediately preceding vowel. The peculiarity of this process is its restricted distribution: it only applies in nominal and verbal contexts, between the final vowel of a noun or adjective and the initial vowel of a determiner or case marker, and between the final vowel of a lexical verb and the initial vowel of a following auxiliary verb. This property of VA poses serious problems for the theory of Lexical Phonology (Kiparsky 1982, Mohanan 1982, 1986) and theories of phrasal and prosodic phonology (Kaisse 1985, Nespor and Vogel 1986, Selkirk 1986), because the domains of application of the process have properties of both lexical and postlexical rules, and do not correspond to any constituent in the prosodic hierarchy.[2]

(1) There are six dialects of Basque, and each of these dialects is fragmented in several local varieties. Lekeitio Basque is a variety of the Biscayan dialect spoken in the coastal town of Lekeitio, of approximately 7,500 inhabitants. A descriptive grammar and vocabulary of Lekeitio Basque was prepared by Hualde, Elordieta and Elordieta (1994).

(2) See Elordieta (1994a, b) for discussion, and Elordieta (1996) for a critical overview of the theories of phrasal and postlexical phonology.

    In this paper we attempt a solution to the problem by exploiting the observation that the rule applies to the initial vowel of inflectional morphemes, that is, elements realizing morphosyntactic features. These are bound elements which require the overt incorporation of another element, in the overt component of syntax or after Spell-Out, and we suggest that this dependency is associated to the general requirement in Universal Grammar that inflectional features be licensed at some point in the derivation. This licensing requirement is due to the inherent morphological weakness or deficiency of inflectional heads. That is, we propose the idea that the morphophonological component of grammar is an interpretive level where only linguistic expressions which are part of well-formed morphological words (which we call m-words, m-constituents or m-domains) are legitimate objects and receive an interpretation as well-formed elements. In the default case, lexical heads are independent m-words, but functional categories realizing morphosyntactic features are deficient in this regard, and thus need to associate with lexical heads in order to be part of well-formed m-words. This association can be done in overt syntax, by head incorporation, that is, a syntactic head may incorporate to the functional head containing morphosyntactic feature(s). This movement could be independently motivated by the operation of feature checking, when the raising syntactic head is inflected for the features present in the functional head. If the incorporating head is an independent m-word, the morphosyntactic feature in the functional head will be licensed morphologically. If the incorporating head is not an independent m-word, however, another syntactic head which is a well-formed m-word may raise to the functional head, so as to license it morphologically. This is the case of the Basque auxiliary, which although inflected for the features in I^0 is not an independent m-word, and thus cannot license the features in I^0 morphologically (more specifically, the feature Tense). The participial verb and negation are independent m-words, however, and they may raise to the auxiliary and then to I^0, thus licensing the features in I^0. When both are present, only negation raises, as it is the closest head to inflection.

    Alternatively, a morphosyntactic feature may be licensed morphologically after Spell-Out, by merging with an adjacent head which is a well-formed m-constituent. This is the case of the Basque determiner, which appears attached to the rightmost element in the NP which has raised in syntax to the specifier position of DP. The determiner and this element merge into an m-word, and thus the determiner satisfies the well-formedness conditions of the morphophonological component.

    We further propose the hypothesis that the morphological domains so formed can be mapped into the phonological component as phonological domains, where phonological processes may be specified to apply. VA would be one such process, specified to apply between two elements contained in the same morphological word. This hypothesis derives the descriptive observation that lexical heads are never affected by VA, since they form independent m-words. Perhaps more importantly, it allows us to explain the contrast between inflected auxiliary verbs, which may undergo VA, and modal particles, causative verbs and subordinating conjunctions, which cannot. The latter type of heads do not contain inflectional features to be licensed, and thus there is no need to assume that they are morphologically deficient. Positing an independent word status for them would account for the contrast.

If our hypothesis is on the right track, it will have consequences for our understanding of the mapping between syntax and phonology, since it will call for a rethinking of the algorithms for creation of phonological domains. We will have to pay more attention at how morphological relationships determine domains which are mapped as phonological constituents.

The paper is organized as follows: in section 2 we introduce the phenomenon of VA and provide the descriptive generalization that VA only occurs between nouns or adjectives and between determiners, and verbs and auxiliaries. In section 3 the structure of the clause in Basque is presented, showing the syntactic interactions between the elements participating in the process of VA and the requirement that a finite auxiliary be properly licensed. In section 4 we analyze the linear sequence *NP-determiner* as a result of the raising of the NP to the specifier position of DP, and suggest that the determiner is licensed morphologically by merging with the rightmost word in the NP, as a suffix. Section 5 contains the analysis to the problem, based on the idea that morphosyntactic features need to be licensed by receiving the incorporation of a syntactic head, and that the unit so formed is interpreted as a phonological domain where VA applies. Section 6 ends the paper with a summary and main conclusions.

2. Vowel assimilation in Lekeitio Basque

2.1. Morphosyntactic distribution

Vowel Assimilation in Lekeitio Basque is an optional rule of colloquial speech by which a syllable-initial vowel assimilates in all its features to an immediately preceding syllable-final vowel. This rule applies word-internally in nominal contexts and across word boundaries in verbal contexts, and it has a very restricted domain of application. In nominal contexts, it only applies between the final vowel of a noun or adjective and the initial vowel of a following inflectional head, i.e., a determiner or case marker. In verbal contexts, it applies between the final vowel of a verb and the following initial vowel of an inflected auxiliary. Let us consider each of these contexts in turn.[3]

2.1.1. *Nominal contexts*

Nominal inflection in Basque is morphologically attached to the last word of the last constituent of the Noun Phrase, not to every constituent contained in it. Thus, when a noun is followed by an adjective, the determiner and case markers or postpositions will be added to the adjective, the noun remaining in its bare uninflected form (cf. (1f, h) in the examples below). The determiner in Basque has

(3) VA may also apply in underived domains, i.e., roots, although the application of the rule seems to be lexically determined:

(i)	bi.ar / bi.ir	'to need'	si.ar / *si.ir	'through'
	si.es.ta / si.is.ta	'nap'	bi.á.je / *bi.í.je	'trip'
	ma.ri.a / ma.ri.i	'make/feel dizzy'	tri.an.gú.lo / *tri.in.gú.lo	'triangle'

distinct singular and plural forms, with a further distinction in the plural determiner between locative and nonlocative cases: *-a* is the singular determiner, *-ak* is the plural determiner, and *-eta* is the plural determiner for locative cases. For each of the underlying forms in (1) we can obtain two alternative outputs, which we separate with a slash. This slash indicates that the two forms are allowed in LB, the one on the left being obligatory and the one on the right representing the optional application of VA. The stem-final vowel is always high, due to the effects of a rule applying prior to VA, the rule of Vowel Raising (VR), which raises a syllable-final [-high] vowel when immediately followed by a following heterosyllabic vowel. We mark syllable boundaries with a dot notation, to show that VA does not apply within syllables, i.e., in diphthongs, and that it does not create tautosyllabic long vowels:[4]

(1) a. /orma-a/   →   or.mi.a / or.mi.i [5]
          wall-det.sg.
          'the wall'

     b. /baso-ak*/ [6]   →   ba.sú.ak / ba.sú.uk
          forest-det.pl.
          'the forests'

     c. /ume-en*/   →   u.mí.en / u.mí.in
          child-gen.pl.
          'of the children'

     d. /gixon tonto*-ak*-k/   →   gixon ton.tú.ak / gixon ton.tú.uk
          man stupid-det.pl.-erg.
          'stupid men'

     e. /etxe-a-n/   →   e.txi.an / e.txi.in
          house-det.sg.-ines.
          'at/in the house'

     f. /kale estu-eta*-n/   →   kale es.tu.é.tan / kale es.tu.ú.tan
          street narrow-det.pl.-ines.
          'at/in the narrow streets'

The affix expressing the meaning of superlative degree is attached to adjectival roots, and appears before a determiner. This affix also triggers VR on the last vowel of the root, and undergoes VA:[7]

(4) The following abbreviations will be used in the text: *abl.* = ablative, *abs.* = absolutive, *all.* = allative, *dat.* = dative, *det.* = determiner, *erg.* = ergative, *fut.* = future, *gen.* = genitive, *ines.* = inesive, *infl.* = inflected auxiliary, *neg.* = negation, *pl.* = plural, *prox.* = proximative, *rt.* = auxiliary root, *sbj.* = subjunctive, *sg.* = singular, *soc.* = sociative.

(5) It is possible to posit an intermediate step in the derivation, in which the low vowel becomes mid, i.e., *or.mi.e*, as this is the output in many dialects.

(6) An asterisk placed behind a morpheme indicates that that morpheme is accented, i.e., that it triggers penultimate stress on the phonological word resulting from concatenation. Morphemes with no asterisks are unaccented, i.e., they only surface with final stress when they are in phrase-final position. For details on the metrical analysis of the Lekeitio Basque dialect, see Hualde, Elordieta and Elordieta (1994), and for more general information on the accentual system of other dialects, see Hualde (1991: ch. 6, 1996).

(7) Not all affixes indicating 'degree' behave similarly with respect to VA. The affixes expressing the comparative of superiority and the 'excessive' degree fail to undergo the rule, although they do trigger VR on the last vowel of the stem:

(2) /soro-en*-a/   →   soruéna / soruúna
     crazy-sup-det
     'the craziest'

Derivational morphemes are consonant-initial in LB, so it is not possible to test their behavior with respect to VA. Nevertheless, there is one example where a vowel-initial derivational morpheme is attached to a noun ending in a vowel, and interestingly, no VA occurs:

(3) /donosti-ar*-a/   →   do.nos.ti.á.rra / *do.nos.ti.í.rra
     Donostia-from-det.sg.
     '(a native of) Donostia/San Sebastian'

The rule of VA does not apply between two members of a compound or across words. See (4) and (5), respectively:

(4) a. /buru-andi/   →   bu.ru.án.di / *bu.ru.ún.di
         head-big
         'big-headed'
     b. /etxe-ondo/   →   e.txe.ón.do / *e.txe.éndo
         house-side
         'side of house'
     c. /soro-antz/   →   so.ro.án.tza / *so.ro.ón.tza
         mad-look
         'mad look'

(5) a. /seru asula/   →   seru a.su.la / *se.ru u.su.la
         sky blue
         'blue sky'
     b. /etxe   andiža/   →   etxe an.di. a / *etxe endiža
         house big
         'big house'

(i) bero-ago*   →   beruá(g)o / *beruú(g)o   (ii) alto-egi*   →   altué(g)i / *altuú(g)i
     hot-comp.   tall-exc.
     'hotter'   'too tall'

We argue that the reason for the impossibility of having VA in (i) and (ii) is due to the process of /g/-deletion existing in Lekeitio Basque, by which intervocalic /g/ is dropped. After /g/-deletion has applied, a sequence of three vowels is formed, and no left-to-right assimilation is allowed in these sequences in Lekeitio Basque. This is also observed when the sociative singular morpheme /gas*/ is added to a nominal root:

(iii) /umi-a-gas*/   →   umi.á.as / *umi.í.as
       child-det-soc.
       'with the child'

I have no straightforward answer for the question of why the deletion of a consonant which does not intervene between the trigger and the target of VA may affect the application of the process. For the time being, I will simply leave it as a description of the facts.

2.1.2. *Verbal contexts*

The rule of VA can also apply between a lexical verb and a vowel-initial inflected auxiliary. The lexical verb is called 'participial verb' in the traditional literature, and we will use that term henceforth. The auxiliary is inflected for subject, direct object and indirect object agreement, tense, aspect, and mood. The vowel-initial auxiliaries relevant for our discussion correspond to transitive forms in the past tense whose initial vowel is a third person ergative marker, *e-*.[8] In this context no raising of the final vowel of the lexical verb occurs; VR is restricted to the boundaries created by nominal inflection and certain roots:

(6) a. / žo e-ba-n/   →   žo eban / žo oban
         hit 3erg.-rt.[9]-past
         '(s)he hit him/her/it'
     b. /galdu e-ba-s-an/   →   galdu ebasan / galdu ubasan
         lose 3erg.-rt-abs.pl.-past
         '(s)he lost them'
     c. /ikasi e-be*-n/   →   ikasi ében / ikasi íben
         learn 3erg.-rt.-past
         'they learnt it'
     d. /atrapa e-be*-s-en/   →   atrapa ebésen / atrapa abésen
         catch 3erg.-rt-past
         'they caught them'

VA does not apply between a lexical verb and a causative verb, which in linear sequence appears between the lexical verb and the inflected auxiliary:

(7) a. paga erain neutzan   /   *paga arain
         pay make aux
         'I made him/her pay'
     b. altza erain dotzat   /   *altza arain
         raise make aux
         'I have made him/her raise'

---

(8) The form of the inflected auxiliary for intransitive verbs in the imperative with a second person singular subject starts with a vowel in Standard Basque (i.e., *hadi*, with an initial *h* which is not pronounced in Standar Basque or in southern dialects). However, in LB this form is *yari*, and thus cannot undergo VA. The initial palatal fricative consonant derives from the verb *e(g)in* 'do' which is underlyingly inserted between the participial verb and the inflected auxiliary in imperative forms with a third person direct object (cf. Hualde, Elordieta and Elordieta 1994: 130-131). Nowadays this verb has lost all its segments except for the vowel *i*, which becomes a palatal fricative by onset fortition. Thus, no VA can apply to this inflected form:

(i)   etorrí e(g)in ari!   >   etorrí yari!
      come aux
      'Come!'

(9) To be more precise, we would have to follow traditional assumptions on Basque verbal morphology, which state that the root of the transitive auxiliary **edun* is *-u-*, which later becomes *-b-* by a process of intervocalic labialization. The vowel *a* then would be simply an epenthetic vowel inserted between this consonant and the *-n* marking past tense.

Some modal particles which constitute independent syntactic heads may intervene between the lexical verb and the inflected auxiliary. These particles do not contribute anything to the propositional content of a sentence, and their basic semantic function is to express epistemic attitudes of the speaker concerning the existence or non-existence of the state of affairs identified by other elements in the sentence. The modal particle *ete* appears in interrogative and exclamative sentences, and conveys a meaning of wondering, uncertainty, doubt, suspicion, on the part of the speaker about the event expressed in the sentence, and *ei* indicates that what is being expressed in the sentence has been reported by other people and that the speaker cannot fully assure the veracity of the event denoted by the proposition. We call the particles *ete* and *ei* 'dubitative' and 'evidential', respectively. Modal verbs in other languages also have epistemological usages (e.g., *may*, *might*, in English, *poder*, *deber* in Spanish), but the modal particles of LB should not be classified as modal verbs, since they are not verbs to begin with. They are not predicates, they do not take any arguments and they are never inflected, unlike regular verbs.[10] Moreover, Basque does have clear modal verbs (*nahi* 'to want', *behar* 'to need'), whose syntactic properties are very different from modal particles.[11]

Also, note that the use of the term "modal" for these particles is not related to the grammatical concept of *mood* (e.g., indicative mood, or subjunctive mood), as Basque has moods independently of the modal particles.

No VA occurs between a lexical verb and these particles:

(8) a. etorri ete díras?   /   *etorri ite díras?
         come dub. aux
         'I wonder whether they have come'
     b. atrapa ei dósu   /   *atrapa ai dósu
         catch evid. aux
         'I have heard that you have caught it'

In adverbial nonfinite clauses, the verb appears followed by a subordinating conjunction. No VA applies between these elements either:

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(10) Tense and agreement are spelled out on the auxiliary, not on the lexical verb, but the lexical verb is inflected for aspect. Perfective aspect is realized by the suffixes *-i*, *-tu* and *-Ø*, to which the suffix *-ko* can be added to convey future tense, combined with the present tense appearing on the inflected auxiliary. Imperfective aspect is realized by the suffix *-t(z)en*.

(i)	a.	eros-i dot	'I have bought it'	d.	eros-ten dot	'I buy it'
		buy-perf. aux			buy-imperf. aux	
	b.	gal-du senduan	'you lost it'	e.	eros-ten neban	'I used to buy it'
		lose-perf. aux			buy-imperf. aux	
	c.	eros-i-ko dot	'I will buy it'			
		buy-perf.-fut. aux				

(11) Cf. Euskaltzaindia 1985, Mujika 1988 for detailed descriptive analyses on these and other modal particles found in other dialects. For an overview of the main properties of modal particles in other languages, and discussion of previous work on the topic, see König 1991, §8.2.

(9) a. ekarri árren   /   *ekarri írren
        bring despite
     b. kompondu ezik   /   *kompondu uzik
        fix   unless

VA does not occur across any other two words, such as a direct or indirect object and a verb (cf. (10a,b), or a subject and the lexical head of a prepositional phrase (cf. (10c), respectively):

(10) a. arraña erosi dau   /   *arraña arosi dau
        fish   buy aux
        '(s)he has bought fish'
     b. amari   astu žako   /   *amari istu žako
        mother(dat.) forget aux
        'the mother has forgotten'
     c. amúma elixan dago   /   *amúma alixan dago
        grandmother church-ines. is
        'the grandmother is in church'

It could be objected that until an analysis of Basque clausal structure is laid out, we do not know whether there are any traces or empty projections intervening between the elements in (10) and whether these traces may be blocking VA. Wh-questions and focalization constructions seem appropriate examples to show that the (non)occurrence of VA is independent of traces or empty categories. There is a consensus among Basque linguists that the wh-phrase/focalized constituent and the verb+auxiliary complex are in a Spec-head relationship in CP (cf. Ortiz de Urbina 1989, 1994) or IP (cf. Artiagoitia 1992), and thus there should be no traces intervening between the wh-phrase or the focalized constituent and the following verb complex, i.e., these elements are strictly adjacent from a syntactic point of view. However, VA cannot take place in this context:

(11) a. nori   emon dótzo?   /   *Nori imon dótzo?
        Who-dat give aux
        'Who has (s)he given it to?
     b. umiari   emon dotzo   /   *umiari imon dotzo
        child-dat give aux
        '(s)he has given it to the child'

The data presented so far show that only the initial vowels of determiners or case markers and inflected auxiliaries can undergo the process of VA in the context of a preceding vowel-final lexical element. As we showed in Elordieta (1994a, b, 1996), the distribution of VA presents serious problems for the theory of Lexical Phonology (Kiparsky 1982, Mohanan 1982, 1986), as well as for theories of phrasal and prosodic phonogy. Although for reasons of limit of space we will not be able to include in this paper the inadequacies of these theories to account for this process, we will briefly mention here the most important problems (cf. the above mentioned work for detailed criticism).

First, there is no prosodic constituent in the theory of Prosodic Phonology (cf. Nespor and Vogel 1982, 1986) which captures the domains of application of VA. It cannot be a prosodic word, because an inflected auxiliary can bear its own underlying stress (cf. (6c,d)), i.e., it constitutes a separate prosodic word.[12] It is not a phonological phrase, because that would also include modal particles and compounds. The existence of the clitic group has been independently called into question in the literature, being reduced instead to either a prosodic word or a phonological phrase.

Second, there is Selkirk's (1986) End-Based theory of prosodic domains. Note that the domains would have to be those contained between the left edges of lexical heads. This would include nouns or adjectives and determiners and case markers on the one hand, and participial verbs and auxiliaries on the other, and it would exclude two lexical heads. However, modal particles present a problem, because they are not lexical words, but function words.

Finally, an analysis in terms of c-command relationships between the trigger and target (cf. Kaisse 1985) will not work, because the same c-command relationships obtain between a participle and an auxiliary and between a participle and a modal particle, as we will see in section 5.

In the following section we will provide an analysis of the structure of the clause in Basque and the relationship among the different syntactic heads, as a prelude to our analysis of the problem.

3. Head movement and Infl licensing in Basque

3.1. Clause structure in Basque

I want to suggest that Basque has a head-initial clause structure, with the following hierarchical organization among the different projections (for reasons of simplicity, possible agreement and tense projections are included in IP) (for related discussion see Albizu this volume):

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(12) The participial verb and the inflected auxiliary constitute separate domains of stress assignment in the following contexts: in utterance-initial position, when the event expressed by the participial verb is the main assertion in the sentence, and in adjunct clauses (cf. Hualde, Elordieta and Elordieta 1993, 1994). Observe the following example, where focus stress is indicated by a cricumflex accent:

(i) atrapâ ebésen
     catch 3erg.-rt-past
     'They DID catch them'

(12)

```
                        CP
                       /  \
                     C⁰    IP
                          /  \
                        I⁰    AuxP
                             /   \
                          Aux⁰    ModP
                                 /   \
                              Mod⁰    NegP
                                     /   \
                                  Neg⁰    VP
                                         /  \
                                       DP    V'
                                            /  \
                                          V⁰    DP
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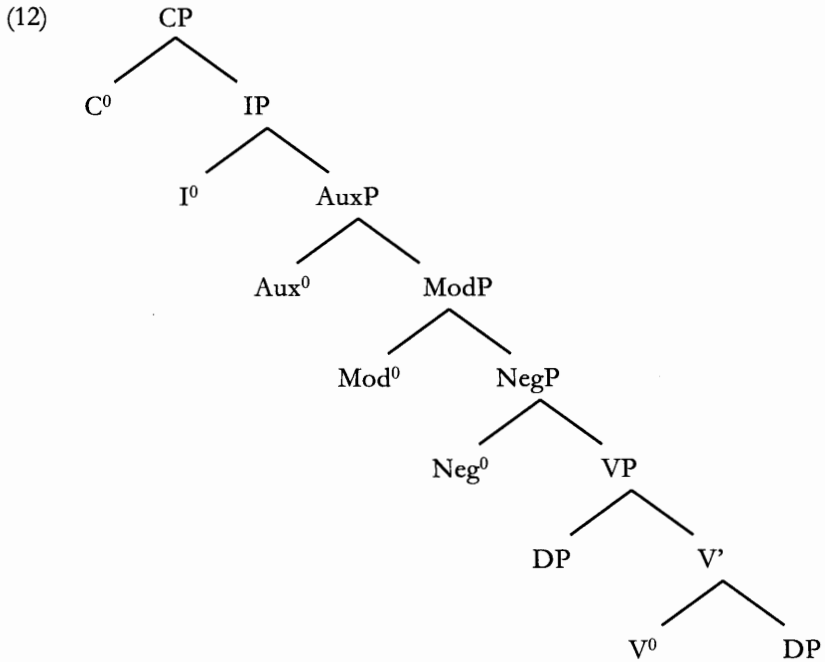
This proposal runs against most of the earlier analyses of the clause structure of Basque. Generative grammarians have been assuming head-final structures for this language, following descriptive observations that heads follow their complements across almost all categories. Ortiz de Urbina (1989) provided evidence that C^0 is initial, however (cf. also Ortiz de Urbina 1994, to appear, and Albizu 1991, 1992). The main argument is that in constructions involving operators, such as wh- and yes/no questions, focus constructions, and negative sentences, the inflected auxiliary occurs on the left edge of the sentence. In interrogative sentences and focus constructions the participial verb appears left adjacent to the inflected auxiliary, forming a verbal complex, and in negative sentences only the auxiliary appears following negation, leaving the participle stranded, in its in-situ position (cf. (13) below). No element can intervene between a wh-phrase, the target of a yes/no question, a focalized constituent or negation and the verbal element(s) that follow. This pattern suggests the verbal elements raise to C^0 to enter in a Spec-head relationship with the element in Spec,CP, along the lines of Rizzi's wh-criterion extended to all operator-involving constructions. This is unexpected under the assumption that all heads are final in Basque:

(13) a. Zer   esan dótzo Péruk Mirenéri?
         what-A say aux   Peru-E Miren-D
         'What has Peru said to Miren?'
      b. Péru etorri da gaur goixian?
         Peru come aux today morning
         'Was it Peru that came this morning?'

    c. <u>Péruk</u>   ekarri dau liburúa gaur goixian
       Peru-E bring aux book-A today morning
       '<u>Peru</u> brought the book this morning'
    d. Ez dozu ekarri liburúa gaur goixian
       neg aux bring book today morning
       'You didn't bring the book this morning'

Other researchers have claimed head-initial status for projections below CP. For instance, Laka (1990) proposes a head-initial ΣP, located between CP and IP, and Artiagoitia (1992) argues that I^0 is initial. Thus, even under the assumption that Basque is head-final, not all projections can be analyzed as head-final. The structure I am positing constitutes simply a step forward towards coherence in the head directional parameter, maintaining the relative hierarchical order among heads suggested by Ortiz de Urbina (1994, to appear). This alternative proposal is compatible with Kayne's (1994) theory of the correspondence between linear order and hierarchical structure, namely that asymmetric c-command maps into linear order. The consequence of this hypothesis is that all languages are head-initial underlyingly and that they display a universal SVO word order, with a specifier-head-complement linear order. In this theory, SOV languages differ from SVO languages in that they involve movement of the object past the verb to a higher functional projection. Working within Kayne's system, Albizu (1994) and Ormazabal, Uriagereka and Uribe-Etxebarria (1994) have recently proposed a head-initial clause structure for Basque.

3.2. Head movement

The structure I am positing predicts the correct surface linear order among the non-nominal heads in a clause. Let us present all the different linear orders observed:

(14) a. Participle - inflected auxiliary: etorri da
                                              come aux
     b. Participle - modal - inflected auxiliary: etorri ei   da
                                                come mod aux
     c. Negation - inflected auxiliary ... verb: ez da iñor   etorri
                                              neg aux anybody come
     d. Negation - modal - inflected auxiliary ... verb: ez ei da iñor   etorri
                                                neg mod aux anybody come

Assuming that only left-adjunction is possible (cf. Kayne 1994), the order in (14a) is derived by movement of the participial verb to Aux^0 and then to I^0 in declarative sentences. The order in (14b) is obtained in a similar way, with the participial verb raising to Aux^0 and then to I^0 by head-to-head movement, incorporating the modal particle on its way up. These configurations are represented in (15) below:

(15)

```
                        IP
                 ┌──────────┴──────────┐
                I⁰                    AuxP
                 │              ┌──────┴──────┐
   [etorri (ei) da  ]        Aux⁰        (ModP)
          i    j    k,1 1       │        ┌────┴────┐
                                │      (Mod⁰)     VP
                               t_k       │         │
                                         │        V⁰
                                        t_j        │
                                                  t_i
```

In (14c) negation raises to Aux^0 and I^0 on its way to C^0, which I assume is the landing position of negation, without recurring to a ΣP projection located between CP and IP (cf. Laka 1990). I follow Ortiz de Urbina (1989, to appear) in claiming that the raising of negation is prompted by the need to occupy the head position of a projection containing an operator, in this case a negative operator. This explains the left-edge position that negation and a following inflected auxiliary occupy in negative sentences. In (14d) the same process applies, with the modal head being incorporated by negation. We represent these derivations in (16):

(16)

```
                         CP
                 ┌───────┴───────┐
                C⁰              IP
                 │        ┌──────┴──────┐
   [ez (ei) da  ]        I⁰          AuxP
      i   j   k,1 1       │      ┌─────┴─────┐
                          │    Aux⁰       (ModP)
                         t_1     │       ┌────┴────┐
                                 │     (Mod⁰)    NegP
                                t_k      │      ┌───┴───┐
                                         │    Neg⁰    VP
                                        t_j    │       │
                                               │      V⁰
                                              t_i      │
                                                     etorri
```
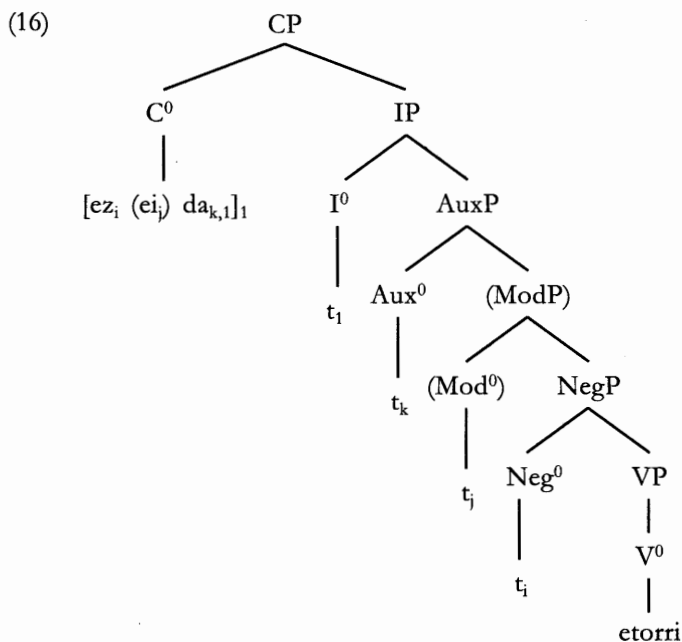
3.3. Infl licensing

An interesting point to notice in these structures is that movement of the participle is not obligatory in all contexts. In negative clauses, it is negation that raises to Aux^0, and the participle remains in situ inside the VP, as evidenced by the fact that arguments and adjuncts may intervene between negation and the inflected auxiliary and the participial verb (cf. (14c,d)). Only in declarative and interrogative sentences does the participle raise to Aux^0 and I^0 (cf. (13a,b) for examples of interrogative clauses). Why do we find this contrast? Ortiz de Urbina (1994) argues that this distributional pattern is due to the weak morphosyntactic character of tensed Infl, based on the observation that verbal forms containing tense features cannot occur in sentence-initial position in verbal focalization constructions or in yes/no questions, in which the verb ends up in C^0. This is the case with synthetic verbs, which are formed by the amalgamation of a verbal root and agreement and tense markers.[13] The following examples from Standard Basque illustrate this behavior (focalized constituents are underlined):

(17) a. Jonek liburua dakar   b. *<u>Dakar</u> Jonek liburua
     Jon book brings   brings Jon book
     'Jon is bringing the book'   c. *Dakar Jonek liburua?

They contrast with periphrastic verbal forms, formed by the combination of a participial verb (with an aspectual marker) and an inflected auxiliary (with agreement and tense morphology):

(18) a. Jonek liburua erosi du   b. <u>Erosi du</u> Jonek liburua
     Jon book buy aux   buy aux Jon book
     'Jon has bought the book'   'Jon has bought the book'
                                c. Erosi du Jonek liburua?
                                'Has John bought the book?'

The starred examples in (17) become acceptable when the particle *ba* appears to the left of the synthetic verb, to shield it from sentence-initial position:

(19) a. Ba-<u>dakar</u> Jonek liburua   b. Ba-dakar Jonek liburua?
     'Jon <u>is bringing</u> the book'   'Is Jon bringing the book?'

Negation also counts as first element in the sentence:

(20) a. *dator Jon   b. Ez dator Jon
     comes Jon   neg comes Jon
                            'Jon is not coming'

Wh-phrases shield a synthetic verb from sentence-initial position as well:

---

(13) Nowadays only approximately twenty verbs can be inflected synthetically. The paradigms they form are defective, in that only present and past tense forms are possible, and some verbs only allow present tense forms. There is no semantic or syntactic criteria determining the synthetic class, in what seems a lexically idiosyncratic distinction. For a list of synthetic verbs, see the grammar of Euskaltzaindia (1985), the Academy of the Basque language.

(21) a. Zer dakar Jonek?   b. Nor dator?
          what brings Jon   who comes
          'What is Jon bringing?'   'Who is coming?'

Inflected auxiliaries are always preceded by participial verbs in the standard and southern dialects, so we cannot find cases in which the inflected auxiliary could be potentially sentence-initial by focalization or yes/no question formation in these dialects. However, in northern dialects it is possible to front the inflected auxiliary alone in constructions involving operators, i.e., in interrogative sentences and focus constructions:

(22) a. Zer   du Jonek erosi?   b. Liburua du Jonek erosi
          what has Jon   buy   book   has Jon   buy
          'What has John bought?'   'Jon has bought the book'

Crucially, inflected auxiliaries pattern exactly like synthetic verbs in all dialects:

(23) a. *du Jonek liburua eros   (24) a. *du Jonek liburua erosi?
          has Jon   book buy   b. Ba-du Jonek liburua erosi?
      b. Ba-du Jonek liburua erosi   'Has Jon bought the book?'
          'Jon has bought the book'

Synthetic verbs in the imperative mood constitute evidence that it is the feature Tense that has this property, and not all the features included in Infl, such as agreement. Imperative forms are inflected for agreement but not for tense, and they do not show the limitations that finite synthetic forms present:

(25) Betor aita!   (From Ortiz de Urbina 1989: 154)
      come father
      'Let the father come!'

Based on Rivero's (1993) analysis for similar facts in Breton, Ortiz de Urbina (1994) proposes that this prohibition against having an element inflected for Tense on the left edge of a clause is due to the fact that Tense is a feature that needs to be licensed overtly in its checking domain, that is, in the projection it ends up in overt syntax. The licensing is done either by the incorporation of a lexical head onto I^0, or by the presence of an element in the specifier position of the projection whose head I^0 occupies in syntax. The participial verb and negation are heads which can license finite Infl by incorporating onto it, and wh-phrases and focalized constituents also license Tense by virtue of filling the specifier position of CP, which is the projection where I^0 ends up in interrogative sentences and sentences containing focalized constituents (i.e., I^0-to-C^0 movement is assumed in those constructions).[14] Negation is assumed to raise to C^0, as its occurrence on the left edge of the clause suggests, and thus it must raise first to the auxiliary and to I^0. Negation licenses I^0 with its incorporation. As for the particle ba-, I agree with Ortiz de Urbina in assuming that it is a particle introduced by last resort to license Tense,

---

(14) Cf. Rivero 1994 for similar treatments of the clitic nature of auxiliaries in the Balkan languages.

in the absence of another head or element in the specifier position of CP. This particle in inserted in C^0.[15] These constraints resemble Wackernagel effects, already noted by Michelena (1957), who mentions the enclitic nature of finite verbal forms, at least auxiliaries (Michelena 1957: 177, fn. 32).

A schematic representation in (26) illustrates the configurations where Infl is licensed. This configuration is the checking domain of Infl, in Chomsky's (1993) sense:

(26)

```
                CP
            ╱───────╲
        XP           C'
                  ╱──────╲
                 C        IP
                 |
          (Participle+) Infl
          Neg+Infl
          Ba+Infl
```
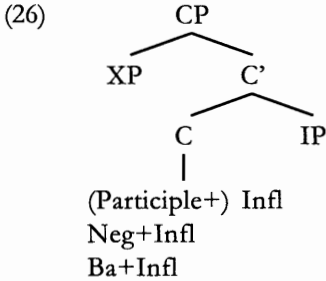
The parenthesis surrounding the participle indicates that it never needs to raise to C^0 in periphrastic constructions in northern dialects (cf. (22)). In southern dialects such as LB the participial verb has to raise to I^0 and then to C^0 even in the presence of an element in Spec,CP. Thus, compare (22) with (27):

(27)   a.   Liburua erosi du Jonek   b.   Nork erosi du liburua?
           book   buy   aux Jon   who   buy aux book
           'Jon has bought the book'   'Who has bought the book?'

Ortiz de Urbina (1994) maintains that the overtly realized XP in Spec, CP is sufficient to license Infl, and that the participial verb raises to Infl for other related reasons: he argues that Infl needs to be lexicalized in Basque, that is, a lexical head must move to it (cf. Tuller 1992 and Horvath to appear for original proposals for other languages). Thus, in non-negative clauses, both declarative and interrogative, V-to-I movement is obligatory in synthetic and periphrastic constructions. In negative sentences, negation raises to Infl alone, without the participle, providing lexical support for it. The participial verb stays behind, without raising to I^0. No explicit explanation is offered by Ortiz de Urbina for the absence of participial verb raising in negative sentences, although the implicit idea is that the raising of one head which is able to provide strong morphological support for Tense is sufficient. We will return to this issue below.

Modal particles do not provide enough lexical support, as shown in (28) and (29). The participial verb has to move with the modal to license Infl, or the particle

(15) In this respect, I disagree with Ortiz de Urbina, who assumes *ba-* to be inserted in the specifier of CP. I take *ba-* to be a last resort spell-out of the affirmative and question morphemes in C^0, introduced in the absence of an element in Spec,CP and/or a lexical head in C^0. In this view, C^0 would be a head that needs to be lexically filled, i.e., licensed, by elements with the relevant features. If no such elements are available in the sentence, *ba-* is inserted, possibly in PF (see Elordieta in preparation).

ba- will have to be inserted, in the absence of a participial verb, negation or an element in Spec,CP:

(28) a. *ei   dator   b. Ba ei dator
          evid. comes   'I have heard that (s)he is coming'

(29) a. *ei   dau Jonek liburua erosi b. Erosi ei   dau Jonek liburua
          evid. has Jon book   buy   buy evid. has Jon   book
          'I have heard that Jon has bought the book'

It is important to underline one aspect of Ortiz de Urbina's analysis, which is that syntactic movement may be triggered not only for feature checking purposes, but also for lexicalizing features. In Basque, the participial verb raises to the inflected auxiliary to provide lexical support. The question is whether this movement is also motivated by the necessity to check features in I^0. I will assume here that I^0 has verbal features that need to be checked by a head with verbal features. Apart from this, I^0 (more specifically, the feature Tense) needs to be provided with lexical support by a head which is a free morpheme and also has verbal features. We are going to assume here that the auxiliary is a verbal head that checks the V-features in I^0, but is a bound root, that is, only the root of the auxiliary appears attached to the inflectional morphemes. From the transitive auxiliary **edun*, for example, only -*u*- surfaces (cf. the glosses in (6)). Thus, the tensed I^0 requires the raising of a verbal head which is morphologically strong, i.e., free or independent. The participial verb is such a candidate.

Negation raises to I^0 on its way to C^0, and it suffices to license tensed I^0 morphologically, as it is a free morpheme and thus can provide strong morphological support to I^0. As for the other requirement, that negation be a verbal head, we could assume that negation has verbal features, as evidenced more clearly in other languages such as Arabic, where negation appears followed by agreement and tense suffixes (cf. Benmamoun 1992 for an analysis of these facts).[16] Meeting all the requirements imposed by I^0 regarding its morphological licensing, the raising of negation is sufficient to provide independent morphological support for this head. Thus, the participial verb does not need to raise to I^0.

A question that can be raised at this point is whether the participial verb and negation are inflected for features present in I^0. The conclusion must be that they are not, assuming that those features have already been checked by the auxiliary. According to the assumptions in the minimalist framework, the features contained in a head cannot be checked more than once (i.e., they disappear once they are checked). If negation and the participial verb were inflected for inflectional features, they would be unable to check them against the features in I^0, since they would have been checked already. The raising of negation is independent of I^0; it moves attracted by features in C^0. The raising of the participial verb is the only one which is motivated by the morphological deficiency of I^0 (and the auxiliary verb).

---

(16) I owe this suggestion to Jean-Roger Vergnaud.

A modal particle does not realize syntactic features of the inflectional sort. Its function in the sentence is discourse oriented, expressing subject oriented attitudes about the event expressed in the utterance, and thus contributing more to the pragmatics of the speech act than to the real truth value of the proposition. Unlike Case and agreement markers, which relate the event with the participants and encode grammatical functions, or unlike tense and aspect morphemes, which specify features of the event itself, modal particles do not relate the event to syntactic elements in the sentence. That is, in contrast to those morphosyntactic features, modal particles are not necessary for the event to be expressed. The constraints licensing their occurrence in a sentence are of a semantic nature, rather than syntactic. Thus, the evidential particle *ei* cannot appear in an interrogative sentence, because the reportative meaning that this particle has is incompatible with a question, in which the main objective is to obtain information. This particle is also ruled out in subjunctive clauses or imperatives, which are not assertions. Albizu (1991) relates these characteristics to the fact that these particles can appear in parenthetical constructions and argues that modal particles are adverbial elements with relative autonomy from the propositional content of the clause and with licensing conditions which are independent from the syntactic structure of the clause. Thus, we believe it is warranted to assume a contrast between participial verbs or negation on the one hand and modal particles on the other in terms of grammatical feature realization. This contrast could suggest that modal particles are not verbal elements, or do not have verbal features, and thus cannot license tensed I^0.

3.4. Other alternative proposals on phrase structure and head movement

Other possible alternatives to the analysis of the clause structure and head movement in Basque proposed in this paper do not seem to be able to account for the whole range of facts in a nonstipulatory way. For instance, Laka (1990) suggests that the participial verb does not raise higher than the head position of an Aspect Phrase, located immediately above VP. If we do not assume that the participial verb incorporates to the auxiliary and then to Infl, we cannot explain why the participial verb appears together with the inflected auxiliary forming a complex head in C^0 in interrogative sentences and focus constructions. We would be forced to assume that the rest of the material in the sentence has extraposed to the right of IP or CP, without a clear motivation for that.

Another possibility would be an analysis in which the participial moved to the position occupied by the auxiliary in a long head movement fashion, in a similar way to what has been proposed by Lema and Rivero (1989, 1991) for Old Spanish, and Rivero (1991, 1993, 1994) and Borsley and Rivero (1994) for Slavic and Balkan languages. Albizu (1991) follows this approach, and suggests that a principle similar to the Tense c-command of Laka (1990) motivates the raising of the auxiliary to C^0 in interrogative and focus constructions, incorporating on its way the inflection and the modal particle. He locates the modal projection above IP, and claims that the auxiliary adjoins to the right of the modal particle. Then he argues that the participial verb raises to C^0, triggered by a wh- or focus operator in Spec,CP.

Although the author is not explicit about this, we assume that he refers to the need to fulfill the wh-criterion of Rizzi (1991). The participle adjoins to the left of the complex formed by the modal particle and the inflected auxiliary, to derive the right word order. This analysis presents two problems: first, the author does not argue convincingly in favor of a motivation for the raising of both the auxiliary and the participial verb in independent movements. The proponents of Spec-head agreement relations between an operator and a head with the relevant features argue that it is the head Infl that carries the features +wh or +focus, not a lexical verb (Rizzi 1991, Horvath to appear). Suggesting two different principles for what seems to be the same triggering element, i.e., the presence of an operator in Spec,CP, seems unwarranted. Second, in order to derive the right order among heads, the analysis suffers from the fact that it has to assume bidirectionality in the adjunction operations; the inflected auxiliary adjoins to the right of the modal, and the participle adjoins to the left of this complex. Notice that these problems arise whether we assume a head-initial or head-final analysis of Basque clause structure.[17] Our analysis does not have to face these problems, since the raising of the participle is motivated by the lexicalizing constraints imposed by these tensed Infl. auxiliary, and the movement of the participle is always to the left of the heads it adjoins to. We only have to assume that the modal projection is located below the auxiliary and above the verbal phrase.[18]

A question that all analyses would have to answer is how the logical scope of the modal particle over the whole clause can be obtained in affirmative declarative sentences, with the neutral word order SOV. We would have to assume that the wide scope of the modal particle is obtained by LF-raising of the modal particle to a projection where it c-commands the whole clause, most likely CP.

To summarize, in this section I have discussed and presented the syntactic configuration that I assume for the structure of the clause in Basque. We have seen that Tense is a morphological feature that needs to be syntactically licensed

(17) Similar problems would arise with any other alternative analyses based on long distance movement. Somebody could propose an analysis in terms of VP-movement, such that the VP moves to the specifier of ModP, located above IP. This analysis would face two additional problems: first, there is the lack of explanation for why all argumental and nonargumental material inside the VP must have raised out of it before the VP moves, and second, this analysis would have to assume that in interrogative and focus sentences the participial head can be extracted out of the VP, violating the principle against extraction out of a CED (Huang 1982), or the more general principle against extraction out of a specifier (cf. Ormazabal, Uriagereka and Uribe-Etxebarria 1994).

(18) The main reason Albizu gives to locate ModP above IP is the existence of data like the following, involving the modal particles *ote* and *omen* (in LB, *ete* and *ei*, respectively):

(i)	—Nork dauka dirua?	—Mikelek omen	
	who has money	Mikel evid.	
	'Who has the money?'	'I have heard that Mikel does (have the money)'	
(ii)	—Loteria tokatu zaizu	—Bai ote?	
	Lottery touch aux	yes dub.	
	'You won the lottery'	'Maybe yes? (i.e., I wonder whether that is true)'	

He takes this to indicate IP ellipsis, but Euskaltzaindia's (1985) grammar cites similar examples in which they state that the modal particles can be pronounced after a pause, dislocated. In fact, these particles may sometimes appear as parentheticals, as if they were used in an adverbial manner. Thus, it is not clear that the modal particles in these constructions are in their regular position in the clause. Moreover, the type of sentences illustrated in (i)-(ii) are ungrammatical in LB.

in its checking domain. In the case of synthetic verbs, the presence of an element in the specifier position of the projection occupied by inflection is sufficient to license tensed Infl. In periphrastic constructions, however, the participial verb has to raise to I^0 together with the auxiliary in order to achieve its licensing. In negative clauses, it is negation that raises to I^0 together with the auxiliary. Following Ortiz de Urbina's (1994) analysis of these facts, we have suggested that tensed Infl. is a weak morphological category that needs to be supported by a head with enough morphological strength and with verbal features, i.e., the participial verb or negation. For our present purposes of trying to explain the phenomenon of VA in LB, the relevant configuration is the one concerning the inflected auxiliary.

Having established the properties of finite Infl, we turn our attention to the other inflectional head in the language, the determiner, to see whether it has similar licensing requirements to Infl, and thus whether we can draw a parallelism between verbal and nominal inflection.

4. Determiners

Maintaining head-initiality for Basque across all categories, we would derive the order *noun/adjective - determiner* either by head movement of the noun or adjective to the determiner or by raising of the NP to the specifier position of DP. Given the fact that the determiner always appears attached as a suffix to the last element in the NP, instead of to the head noun, the latter option seems the most straightforward one. The example in (30) illustrates a sequence noun-adjective-determiner:

(30) $_{NP}$ [gixon argal] $_D$ [-a]
         man   thin   det
        'the thin man'

Note that determiners can occur attached to the last element in a phrase with an empty head noun, as in the relative clause in (31), thus providing even stronger evidence that the nominal constituent preceding the determiner is a maximal projection, not a head noun. Within the assumption of a uniform head-initial structure for Basque, the relative clause must have raised to the left of the noun (cf. Kayne 1994), and then the whole NP moves to the specifier position of DP, plausibly to check the NP-features of the determiner.

(31) $_{DP}$ [$_{NP}$ [$_{CP}$ [gaur goixian   etorri dan]] $_D$ [-a]
                        today morning come aux   det
                    'the one that came this morning'

The determiner is a bound morpheme, a suffix, and it attaches to the last element of the phrase that precedes it. Thus, it would be a phrasal clitic (of the type discussed in Nevis 1985, Poser 1985, Zwicky 1987, and Miller 1992), or a lexical clitic, in Halpern's (1995) terms. We could assume that the suffixation process is done at PF, and that this process serves to license and lexicalize the determiner, by

providing lexical support to it. This operation would then have the same results as the process of incorporation discussed in the preceding section for Tense. Nevertheless, it still remains to be clarified whether the suffixation is done by raising the determiner to the last word in the specifier of DP, by lowering this word to the determiner, or by some other alternative movement. If we are right in treating the determiner as a phrasal clitic, then we should adopt the first option, since it is standardly assumed that phonological clitics attach themselves to adjacent elements, rather than the other way around. In this respect, the morphological licensing of the determiner is different from that of Tense, which is done by the incorporation of another syntactic head. These and other differences can be expected, however, given the fact that these two processes apply in different components of grammar; the incorporation onto I^0 occurs in syntax, and the suffixation of the determiner is done in the morphological component, where the mechanisms for movement are different from those of syntax (cf. for example the operations of merger, fusion, and fission among morphemes discussed in Bonet 1991, Noyer 1992, Halle and Marantz 1993, and references there).

The morphophonological operation of suffixation could then be represented as in (32):

(32)

```
                        DP
              ┌──────────┴──────────┐
             NP                     D'
        ┌─────┴─────┐          ┌────┴────┐
 [gaur goixian etorri dan]ᵢ-aⱼ  D        NP
                                |         |
                                tⱼ        tᵢ
```
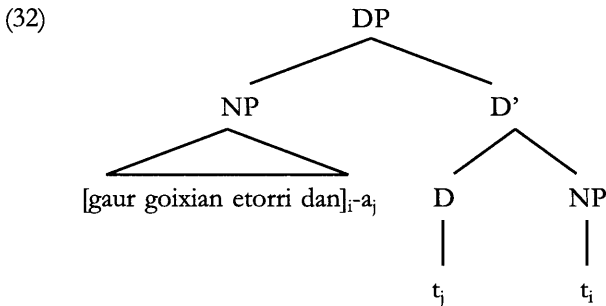
The simpler case of a noun or adjective to which the determiner is suffixed, such as *arrebi-a* 'the sister', would have the following representation:

(33)

```
                   DP
           ┌───────┴───────┐
          NP               D'
       ┌───┴───┐       ┌────┴────┐
  [arrebi]ᵢ-aⱼ          D        NP
                        |         |
                        tⱼ        tᵢ
```
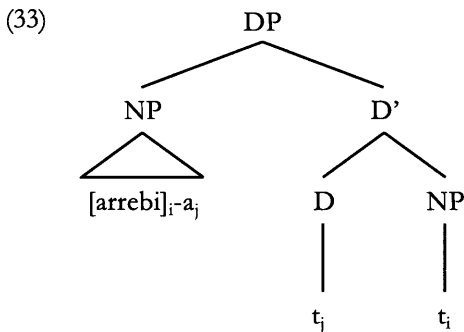
5. An analysis in terms of morphological licensing

What does all we have argued for so far tell us about the domain of application of VA? Note that it is not sufficient to say that the domain of application of VA is an X^0, formed in syntax or phonology, because although that eliminates sequences of a noun and an adjective, a subject and a verb, a subject and a direct object, and so on, it does not account for the absence of VA between a participial verb and a modal particle, which end up in an X^0 in overt syntax (cf. section 3). Nor can it explain why there is no VA between a participial verb and a causative verb, which also end up in the same X^0 in syntax. In (34) below we illustrate a schematic derivation involving movement of a participial verb onto a causative verb which selects it:[19]

(34) a. Jonek Mireneri etorri erain dotzo
          Jon-E Miren-D come caus aux
          'Jon has made Miren come'
      b.   CP
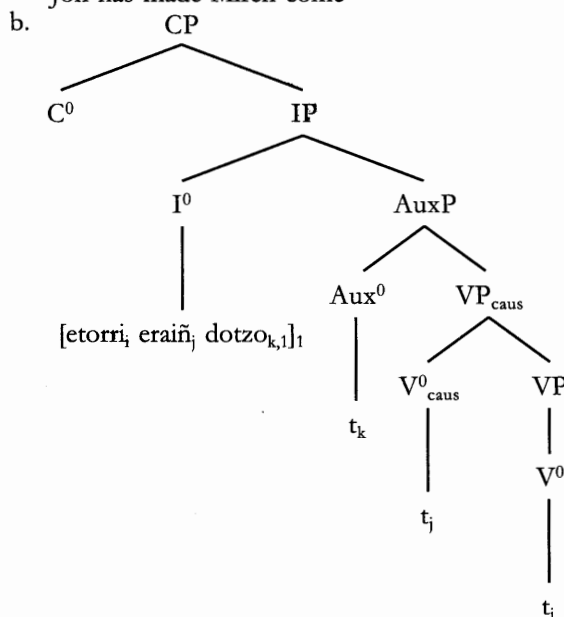
As we can see in the diagrams in (35), the adjunction structure that obtains when a participial verb raises to Aux^0 and then to I^0 is the same as the one obtained when it raises to a modal particle and a causative verb:

(19) The causative verb *erain* may well select an IP in Basque, instead of a VP, on the basis of the diagnostics provided for causative verbs by Ritter and Rosen (1993). But even in such a case the participial verb and the causative verb would appear in the same X^0 on surface, so in the end whether the causative verb selects an IP or a VP does not matter for our present purposes. As for the motivation for the movement of the participial verb to the causative verb, we could follow an anonymous reviewer's suggestion that this movement could be semantic in nature, in particular for complex predicate formation.

(35) a. I^0 b. Mod^0 c. $Caus^0$

                         /\   /\   /\

          Aux^0 I^0 V^0 Mod^0 V^0 $Caus^0$

        /\

     V^0 Aux^0
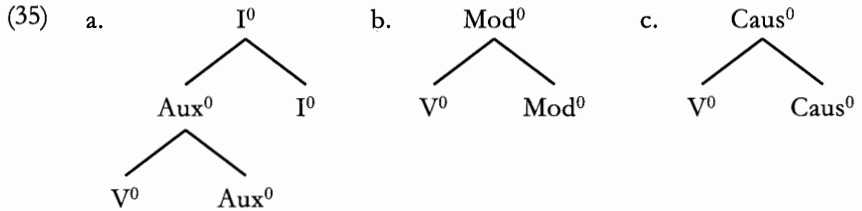
Then, what is the difference between (35a), which is a potential context for VA, and (35b,c), which are not? There is no hope in an analysis in terms of prosodic cliticization of the auxiliary to the participial verb for reasons of stresslessness of the inflected auxiliary. On the one hand, as we mentioned in section 2.1.2, the inflected auxiliary may bear its own underlying stress (cf. (6c,d)), and the participial verb and the auxiliary may form independent domains for stress assignment (cf. fn. 12). Still, VA may apply, as illustrated in (36a) below. On the other hand, causative verbs and modal particles may sometimes be integrated in the same stress domain with the participial verb and the inflected auxiliary, but no VA occurs (cf. (36b, c)), where the stress domain is indicated with a bracket:

(36) a. /atrapa e-be*-s-en/   → (atrapá) (ebésen) / (atrapá) (abésen)
       catch 3erg.-rt-past
       'They DID catch them'
   b. /atrapa erain neutzan/ → (atrapa erain neutzan) / *(atrapa arain neutzan)
       catch caus aux
       'I made him/her catch'
   c. /atrapa ete* eban/   → (atrapa ete éban) / *(atrapa ate éban)
       catch dub. aux
       '(I wonder whether) (s)he caught them'

We argue that the difference lies in the distinction between functional categories which carry morphosyntactic features to be checked or licensed and functional or lexical categories which do not. I follow original ideas of the minimalist framework that all functional heads containing morphosyntactic features (e.g., agreement, tense, aspect, definiteness) have to be checked at some point in the syntactic computation for the linguistic derivation to converge (cf. Chomsky 1993, 1994, 1995). That is, a feature needs to enter in a checking relationship with a lexical head specified for the same feature in overt or covert syntax, i.e., before Spell-Out or after Spell-Out, in LF. The configurations in which these checking operations may take place are either a spec-head relationship, or head incorporation, i.e., the licensing takes place in the functional head's checking domain. In minimalist terms, all movement is triggered by checking purposes. I want to suggest, however, that this is not necessarily so. As we mentioned before, the participial verb only raises to Aux^0 and then to I^0 in affirmative declarative sentences and interrogative sentences. When negation is present, however, it is negation that raises to the auxiliary and to I^0, the participial verb staying behind. This asymmetric behavior in participial verb raising between negative and nonnegative sentences shows that

feature checking is not the operation triggering participial verb movement, or alternatively, that the participial verb is not inflected for the features in I^0 (cf. the discussion at the end of section 3.3). That is, if the movement of the participial verb is overt in some contexts, and we attribute it to feature checking requirements, we would expect overt movement of the participial verb in all instances. Thus, Tense is triggering the raising of the participial verb or negation for other purposes different from feature checking. We argued that Tense is a weak morphological feature that requires morphological support, achieved with the incorporation of another head which is sufficiently strong to provide such support. Now we need to explain what this lexicalizing requirement really means. I want to suggest that this requirement responds to a general overriding principle of UG, the Principle of Full Interpretation (FI), first discussed in Chomsky (1986).

FI subsumes many of the principles present in a Principles and Parameters theory of Universal Grammar, such as the Binding Theory, c-selection, s-selection, or the Theta Criterion. Ultimately FI requires that every element of PF and LF must receive an interpretation, that is, it must be licensed in an appropriate fashion: an operator is licensed by binding a variable in a local domain, a variable must be bound, referential dependencies must meet the conditions of Binding Theory, every complement of a head must be s-selected by it, an element that assigns semantic roles must have recipients in appropriate syntactic positions, an element that requires a semantic role must be assigned such a role, a predicate must have a subject which is syntactically defined, and so on. The principle of Visibility, which derives the Case Theory ("an element is visible for θ-marking only if it is assigned Case") is also an instantiation of the more primitive principle of FI. I want to suggest that FI also requires linguistic elements to be licensed morphologically, by being part of a well-formed word. A linguistic element may be licensed (i.e., receive an interpretation) as a word by itself, if sufficiently strong. If it is weak or deficient to stand as as independent word, it will need to associate with another head and form a complex head with it. This association can be done by overt syntactic movement or by morphological movement in the morphophonological component (i.e., by PF-movement). In the default case, referential expressions and lexical categories in general form independent words, whereas morphemes or functional categories carrying bundles of morphosyntactic features are deficient words. This is reflected overtly by the fact that functional categories appear quite regularly as bound forms, attached to lexical elements either as affixes or as clitics.

The idea that functional heads spelling out morphosyntactic features need to be morphologically licensed if they are weak morphological words is not independent of the minimalist idea of feature checking. In the minimalist framework, it is claimed that all features must be checked in the syntactic derivation, overtly or covertly, i.e., before Speel-Out or at LF. By the operation of feature checking, morphosyntactic features form complex X^0s at LF with syntactic heads inflected for those same features. This is the way morphosyntactic features are licensed in the syntactic derivation Now, we could interpret this general principle of grammar in the following terms; the functional heads containing bundles of morphosyntactic features do not form legitimate LF words by themselves, and need to be licensed by

the incorporation of another head with the right features. Then, we propose that parallel to the necessity to license morphosyntactic features in the syntactic computation, there is the necessity to license these features morphologically, due to their inherent morphological deficiency. In other words, functional heads realizing morphosyntactic features are not legitimate morphological words by themselves, and need to be licensed morphologically by forming legitimate m-words. The level of grammar where morphological well-formedness is checked would be the level of Morphological Structure, after the operation of Spell-Out has sent the linguistic derivation to PF (cf. Halle 1990, Bonet 1991, Noyer 1992, Halle and Marantz 1993).

The perfect coincidence of syntactic and morphological feature licensing is observed when a syntactic head checking a feature or a bundle of features in a functional head is an independent morphological word by itself. Then the features in that functional head get licensed ot the LF and MS levels of grammar. There is however the possibility that the syntactic head checking the feature(s) is weak or deficient morphologically. In this case no morphological licensing will have been achieved by the operation of syntactic feature checking. The Basque auxiliary is an example: it checks the features in I^0 but is itself deficient morphologically (it is a bound root, represented by a single vowel). Then, there are two mechanisms available in order to achieve morphological legitimacy: the syntactic raising of another head which is morphologically strong, or an operation of cliticization, in the morphophonological component. The case of the Basque auxiliary represents the first option: another head which is morphologically strong raises to solve this deficiency, of both I^0 and the auxiliary. The participial verb is a possible candidate, and raises to Aux° and I^0, thus licensing theses categories morphologically. Negation raises to C^0 for independent reasons, and on its way up it incorporates onto Aux^0 and I^0, thus also licensing them morphologically.

The determiner in Basque exemplifies a case of morphological licensing done in the morphophonological component, after Spell-Out. We showed that it does not receive the syntactic incorporation of a head, but it is suffixed to the last word in the phrase in Spec,DP.[20]

To summarize our hypothesis, all morphosyntactic features need to be licensed by associating with a syntactic head with lexical import, a head which constitutes an independent word by itself. The morphemes realizing syntactic features are integrated within the same linguistic unit, call it a word, with the syntactic head that licenses them. We characterize this as follows:

(37) $[\ \alpha\ ]_{w(lic.)}$ $[\beta]_{+F}$ $\rightarrow$ $[\alpha\ \beta]_w$

(20) The reader may have noticed that our proposal is similar to Lasnik's (1981) Stray Affix Filter. This filter states that every morphologically realized affix (i.e., inflectional affix) must be a syntactic dependent of a morphologically realized category at surface structure. However, the Basque auxiliary shows perhaps that Lasnik's filter is not inclusive enough, and it should be extended to all phonetically realized morphosyntactic features, whether they are affixes or not. Classifying the Basque auxiliary as an affix would seem unwarranted, given the fact that it can bear its own underlying stress, and that it displays relative freedom in host selection (a participial verb or negation can serve as hosts). Finally, we have argued that the Basque determiner is a suffix, and that the suffixation proper is done after Spell-Out, so in this case we would diverge from Lasnik in allowing an affix to find its host after Spell-Out, i.e., after 'S-structure'.

In Basque, the determiner and finite Infl are functional heads that need to be licensed overtly, i.e., they are strong heads or bundles of features. The determiner is licensed morphologically by suffixing to the last element in the NP. In the case of I^0, the participial verb or negation serve as morphosyntactic licensers. Negation is an independent syntactic head, which can stand in isolation in a sentence, and whose licensing properties are shown independently by its ability to license negative polarity items.

In (38a,b) below we provide examples of the instantiation of (37) in nominal and verbal contexts, respectively:

(38) a. [umi]$_{w(lic.)}$ [-a]$_{+F}$ →   [umi -a]$_w$
          child   det-sg   'the child'

      b. [ekarri]$_{w\ (lic.)}$ [eban]$_{+F}$ →   [ekarri eban]$_w$
          bring   aux   '(s)he brought it'

If our working hypothesis is on the right track, then we could begin to grasp the nature of the contexts of application of VA. This process occurs in the context formed by a lexical verb (a participial verb) and an auxiliary inflected for tense and agreement, and in the context of a noun or adjective and a determiner, inflected for number, case, and specified for definiteness. That is, VA occurs between a lexical category and a morpheme realizing inflectional features. Phonological processes of assimilation and dissimilation are more likely to occur when the boundaries between two elements are weaker, or the two elements are in the same domain. Our proposal is that VA occurs when an element which needs to be licensed gets associated with a syntactic element that can license it, that is, after they are integrated into the same word. Following the formulation in (37), we could state that the initial vowel of the inflectional morpheme (β) assimilates to the final vowel of a preceding element licensing it (α). This amounts to saying that the word is mapped at PF as a domain for the application of VA. Moreover, if there is a level of Morphological Structure located between the syntactic and phonological components, after the derivation is sent to PF cf. Bonet 1991, Noyer 1992, Halle and Marantz 1993, it would be natural to assume that this is the level where the word is visible as a morphological domain, and that this domain is later mapped as a phonological domain, where phonological rules may apply. In (39) we express the domain of application of VA, as the phonological component would interpret it. The subscript m stands for the morphological domain mapped from Morphological Structure:

(39) Domain of VA: [α β]$_m$

(40) a. [umia$_\alpha$ $_\beta$-a]$_m$ →   umii
      b. [ekarri$_\alpha$ $_\beta$eban]$_m$ →   ekarri iban

With this analysis we can explain the fact that VA does not occur between two lexical categories: because they are not part of the same m-domain, but of separate ones. This would include causative verbs as well:

(41) a. [lora]_m [ederra]_m   →   lora ederra   *lora adarra
          flower beautiful
      b. [salta]_m [eraiñ]_m   →   salta eraiñ   *salta araiñ
          jump   make

As for the absence of VA between members of compounds, we would assume
that each member is an independent word, which combines with the other to form
another word:

(42) [[etxe]_m [ondo]_m]_m   →   etxeondo   *etxeendo
      house side

What remains to be explained now is why VA does not apply between a verb
and a following modal particle, even though a modal particle could be classified as a
function word (cf. section 3). We argue that this is because modal particles do not
realize inflectional features. As we stated in section 3.3, their function in the
sentence is discourse oriented, and the constraints licensing their occurrence in a
sentence are of a semantic nature, rather than syntactic. Thus, it seems warranted to
assume that they do not have any morphosyntactic features which need to be
licensed or checked.

They would thus constitute separate morphological words, and that is why no
VA is observed between participial verbs and these elements:

(43) [ekarri]_m [ete]_m   →   ekarri ete   *ekarri ite

Although according to our theory modal particles are not incorporated into an m-
word with a lexical category, we must note that modals are also deficient syntactically,
because they are not sufficiently strong to license an auxiliary. Recall that a participial
verb has to raise to the inflected auxiliary even in the presence of an intervening modal
particle, and that the modal particle cannot start a clause (cf (28), (29) above). Still, we
maintain that a modal particle is not a morphologically bound element, unlike an
inflected auxiliary. We would argue that the former is a head which is syntactically
deficient, whereas the latter is morphologically deficient, by virtue of carrying
morphosyntactic features which need to be licensed in the linguistic derivation. A modal
particle is simply a syntactic head with epistemological meaning. To put it in simple
terms, the intuition we are expressing is that a modal particle is a "weak" syntactic head
which cannot license another head, but which does not need to be licensed.

Another piece of evidence showing that there is a substantial difference between
finite Infl and modal particles is the phenomenon of n-deletion, by which the final
/n/ of a participial verb gets deleted in the presence of a following vowel-initial
auxiliary. This rule of n-deletion provides the context for VA:

(44) a. erun eban   →   eru eban / eru uban
          take aux
          '(s)he took it'
      b. žan ebasan   →   ža ebasan / ža abasan
          eat aux
          '(s)he ate them'

No other elements following a participial verb trigger such a rule. Thus, the outputs in (45) are not acceptable:

(45)   a. erun ete dábe?   →   *eru ete dábe?
             take dub. aux
             '(I wonder whether) they have taken it'
         b. žan éi dau   →   ža éi dau
             eat evid. aux
             'I have heard that (s)he has eaten it'

This contrast between auxiliaries and modal particles shows that the degree of cohesion between participles and finite Infl is closer than the one between participles and modal particles. We argue that this is a reflection of the fact that finite Infl are licensed by participial verbs.

Similarly, we would only have to assume that subordinating conjunctions such as *ezik* 'unless' and *arren* 'despite' do not intervene in phonological relationships with participial verbs because they are syntactic connectives with lexical meaning. They are not inflectional categories whose features need to be licensed. Thus, they are not morphologically deficient, and would not constitute a single m-word with the participial verb.

Our analysis then makes a prediction: functional categories which contain morphosyntactic features to be checked will be in the default case weak morphological constituents, and thus need to form part of a well-formed m-word with an adjacent independent m-word. As a consequence, they will be potential targets of VA, if they are vowel-initial. On the other hand, functional heads which do not contain morphosyntactic features to be checked constitute independent m-words. They are then predicted not to undergo VA. As an anonymous reviewer rightly points out, the correlation made by our analysis is further supported by the absence of VA between a noun or adjective and a following quantifier, which is not inflected for features that need to be checked:

(46)   etxe asko   → $_m$[etxe] $_m$[asko]   etxe asko / *etxe esko
         house many
         'many houses'

The same reviewer asks what the behavior of demonstratives is with respect to VA, since they are all vowel-initial: *hau* 'this', *hori* 'that', *ha* 'that one over there'; *hónek* 'these', *hórrek* 'those', *hárek* 'those over there' (as in all southern dialects, the *h* is not a pronounced consonant in LB). Unlike Standard Basque, demonstratives in LB precede the NP, except for *hau* and *hori*, which can appear following the last element in the NP, like determiners. In fact, like determiners, they trigger the rule of VR, by which the final nonhigh vowel of a stem becomes high, when followed by a vowel-initial suffix (cf. (47), and compare it with the examples in (1), in section 2.1.1). The prediction would thus be that demonstratives display the same behavior as determiners with respect to VA. Nevertheless, VA does not apply to demonstratives in LB:

(47) a. /etxe-au/   →   etxiau / *etxiiu or *etxiii
         house-dem.
         'this house'
      b. /etxe-ori/   →   etxiori / *etxiiri
         house-dem.
         'that house'

The explanation for the contrast with determiners is phonological in nature: these forms begin with a diphthong and a round vowel, respectively, which are not affected by assimilation. Determiners beginning with a round vowel do not undergo VA, for instance. Consider here the plural proximative determiner -*ok*, which unlike the plural determiner -*ak* does not undergo VA:

(47) a. /umí-ak/   →   umíak / umíik
         child-det.pl
         'the children'
      b. /umí-ok/   →   umíok / *umíik
         child-del.pl.prox.
         'the children (proximative)'

No additional examples of functional categories with initial diphthongs failing to assimilate can be found in LB. All other cases involve lexical heads such as the verb *ein* 'to do', or the evidential modal particle *ei*, so these do not help us show that initial diphthongs never assimilate (i.e., lexical heads or modal particles are categories which are predicted not to undergo VA). However, there is evidence from other dialects of Basque that shows that complex syllable nuclei are resistant to vowel assimilation. In Arbizu, for instance, long vowels fail to undergo the partial assimilation rule that raises a low vowel and turns it into a mid vowel (examples from Hualde 1988, chapter 2, section 3.1.):

(48) a. /mendi-ak/   →   mendijek
         mountain-det.pl.
         'the mountains'
      b. /mendi-aa-n/   →   mendijaan *mendijean or *mendijeen
         mountain-det. sg.-ines.
         'in the mountain'

Hualde (1988) analyzed this contrast as due to the inalterability of geminates (cf. Hayes 1986, Schein and Steriade 1986). Our proposal would then be that diphthongs in Basque are like geminate vowels in that they are complex nuclei, and as complex nuclei they are resistant to assimilation.

6. Summary and conclusion

In the analysis provided in this paper for the problem of identifying the domain for the phonological process of VA we explored the idea that morphemes realizing inflectional features such as agreement, tense, or aspect are weak or deficient mor-

phological words, that is, that they inherently lack an independent morphological structure of the form ${}_m[$ $]$. We proposed the hypothesis that in the morphophonological component, at the level of Morphological Structure, all linguistic expressions must be contained in a constituent of the form ${}_m[$ $]$, that is, a well-formed m-word. Otherwise they will be judged to be illegitimate objects at this level. In the default case, lexical heads are independent m-words, whereas functional categories realizing morphosyntactic features are not. Given this hypothesis, morphosyntactic features need to be licensed morphologically in order to receive an interpretation as well-formed words. The licensing is done by forming a morphological unit with an element which is an independent m-word, and this unit may be formed by syntactic incorporation of that head, or by morphological movement between the two heads. In LB we argued that the auxiliary is insufficient to license Infl morphologically, and that it needs to be licensed by the incorporation of another head, such as the participial verb or negation. The determiner is another inflectional head whose features have to be checked, and that needs to be licensed morphologically. This is achieved by the suffixation of the determiner to the rightmost word in the NP, in the morphological component.

Modal particles, subordinating conjunctions and causative verbs, on the other hand, are syntactic heads which do not carry features to be checked. Thus, their morphological properties need not be similar to those of functional heads carrying morphosyntactic features to be checked. Indeed, they could be independent m-words. Our analysis of VA provides evidence in favor of the latter possibility. We suggest that an m-constituent may be interpreted in the phonological component as a domain of application of phonological rules, and the m-constituent formed by the union of an inflectional head and a morphologically strong head can thus be a phonological domain. We saw that the auxiliary and the participle formed one domain for the application of VA, as well as a noun or adjective and a determiner. However, no VA applies to modal particles, subordinating conjunctions and causative verbs. If our hypothesis is correct, then we have established an independent empirical confirmation of the reality of morphological licensing in Universal Grammar. We suggested that the minimalist notion of feature checking overlaps with morphological licensing, in the sense that a feature which is overtly checked by a head which is morphologically strong is automatically licensed morphologically.

Finally, our analysis avoids the problems that other theories of phrasal and prosodic phonology have to face to account for the phonological phenomena discussed in this paper because it looks closely to the syntactic and morphological relationships existing between the different heads, thus showing that the information deriving from morphosyntactic operations is more important to phonology than what has been assumed so far in the area of prosodic phonology.

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THE LIMITS OF ARGUMENT STRUCTURE

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1. Introduction[1]

For several years we have been trying to understand why the argument structures of verbs, in all languages evidently, are relatively impoverished in diversity and syntactic complexity, by contrast to sentences, whose potential complexity is essentially without limit (cf. Grimshaw 1990; Hale and Keyser 1994). Only rarely does the complexity of a verb exceed that of English *put* or *give*. We believe that the explanation for this limitation is to be found partly in the fundamental nature of the lexical categories, or parts of speech, and partly in certain basic principles according to which syntactic structure is "projected" from lexical items. We will suggest what these factors are presently, after a brief review of some of their effects.

2. Some elementary observations

In English, so-called "unergative" verbs have the characteristic that they lack the transitivity alternation which would otherwise permit not only (1a) below, but also (1b):

(1) (a) The colt sneezed.   (b) *The alfalfa sneezed the colt.

In this, unergatives differ from "ergative" verbs like *break,* and *clear,* which have both transitive and intransitive uses. We assume that the basic lexical representation of unergatives is identical to that of expressions of the type represented by *make trouble,* exemplified in (2a) below, and we assume further that the ill-formedness of (1b) is due to the same factor as that which gives rise to the ill-formedness of (2b):

(2) (a) John made trouble (because of the rum he drank).
   (b) *The rum he drank made John trouble.
       (Cf. The rum caused John to make trouble.)

The argument structure shared by the verbs of (1a) and (2a) corresponds to the verbal projection depicted in (3). The verb takes a nominal complement, as shown. In the case of (1a), the verbal head is initially empty, deriving its surface phonological form through "incorporation" of its nominal complement *sneeze*. By contrast, the verb of (2a) is phonologically constituted; its nominal complement, therefore, does not incorporate and, instead, develops a complete DP projection —and this satisfies the Case Filter in the usual way, as required, once the verbal projection itself combines with appropriate functional categories in sentential syntax.

(3)   V
          / \
         V   N
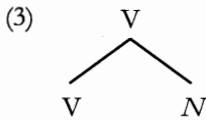
Given (3), the question raised by the data of (1) and (2) can be reformulated in terms of the grammatical relation subject, an argument absent from (3). The apparent subjects in (1a) and (2a) are *external* to the lexical argument structure. If the verb of (3) projected an internal specifier (i.e., subject) position, we would expect (1b) and (2b) to be perfectly grammatical, on the analogy with *clear,* as in (4a, b):

(4) (a) The screen cleared.   (b) I cleared the screen.

In (4), the lexical projection involves a verbal head, as before. Its complement, however, is an adjective, not a noun. In addition, an internal specifier is projected, as shown in (5), the lexical structure assumed for *clear* above:

(5)   V
          / \
        (V) V
            / \
           N   V
              / \
             V   A
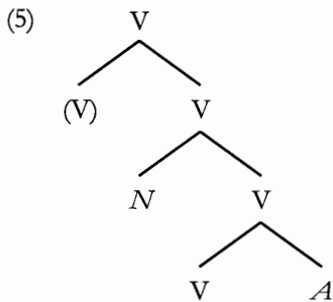
The inner structure of (5) represents the basic lexical configuration defined by the intransitive de-adjectival verb *clear,* exemplified in (4a). The verb itself is derived by incorporation, just as in the case of denominal unergatives. But in this case, the verb projects a subject position. The basic verb can combine with a higher empty verb, as indicated parenthetically in (5), giving the transitive form exemplified by (4b). The question we are left with is this: Why can't an unergative verb project a

subject and transitivize in the same way? In other words, why is (6), the hypothetical lexical structure underlying (1b), impossible? This is the proper form of our question, given our assumptions.

(6)   *(V)
          /   \
      (V)   V
              /   \
           N   V
                   /   \
                 V   N
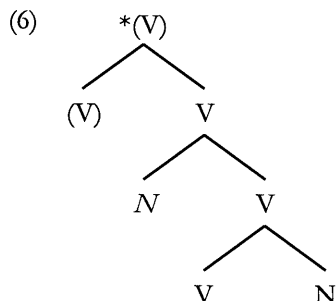
The subject of an intransitive ergative (i.e., inchoative) verb is an *internal* subject, while the subject of an unergative is *external.* That is the upshot of the observations just made.

In neither case can a subject incorporate into the verb and leave the complement to project to the phrasal level. Thus, for example, assuming verbs of animal birthing (like *calve, pup, foal*) are unergatives, the verb of (7a) below is perfectly possible, being derived through incorporation of its complement. But the verbs of (7b, c), with the subject incorporated, are impossible. This is understandable, of course, given that the subject of an unergative is external and, therefore, not "visible" to the verb. But visibility is irrelevant, in fact, since an internal subject is also impossible to incorporate, as the ill-formedness of (7e) demonstrates:

(7) (a) A cow calved.   (d) A screen cleared.
     (b) *A calf cowed.   (e) *It screened clear.
     (c) *It cowed a calf.

This further limitation on the variability of argument structures must be explained by an adequate theory of the lexicon, of course, and our expectation is that it will follow from the inherent properties of the lexical categories and the basic principles of syntactic projection.

If location and locatum verbs, like those of (8a, c) below, and de-adjectival verbs, like that of (8f), are derived by incorporation, the process is successive incorporation into immediately governing heads. Thus, N_2 of (9a) incorporates first into P and the resulting compound then incorporates into V. Similarly, A of (9b) incorporates first into its sister V. The result then raises to the upper V. What is impossible is incorporation from the specifier (N_1 of (9a), or N of (9b)) into the upper V, as attested by the ungrammaticality of (8b) and (8e), in which the incorporated nominals *apple* and *house* originate in the specifier position represented by N_1 in (9a), and by the ungrammaticality of (8g) in which the putative source of the denominal verb *spear* originates in the position corresponding to N.

(8) (a) They put the apples in a box/boxed the apples.
    (b) *They appled in the box.   (c) They painted the house.
    (d) He gave the house a coat of paint. (f) He straightened a spear.
    (e) *He housed (with) a coat of paint. (g) *He speared straight.

(9) (a)   V   (b)   (V)

         V   P   (V)   V

              N_1 P   N   V

                      P N_2 V   A
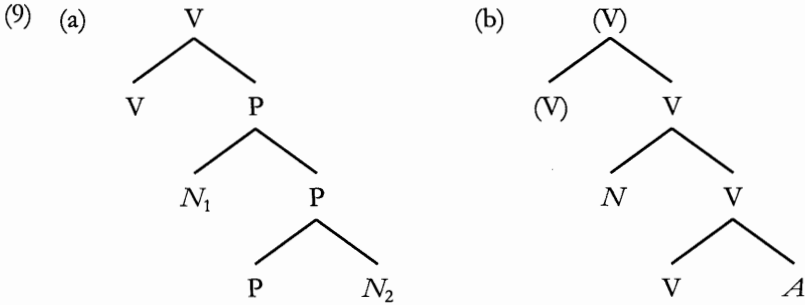
In short, incorporation of the type under consideration here is from the complement position, never from a specifier position. Here again, we have a limitation on possible argument structures, and it is reasonable to expect that it will be explained by reference to properties inherent in the categories and by reference to the principles according to which the categories project in syntax.

The structures of (9) are relevant also to the problem represented by the sentences of (10). Denominal location and locatum verbs are limited to the transitive use—hence the ill-formedness of (10b, d). De-adjectival verbs, on the other hand, can be either transitive or intransitive, as in (10e, f):

(10) (a) She corraled her horses.   (b) *Her horses corraled.
     (c) She saddled Zebra Dun in the morning.
     (d) *Zebra Dun saddled in the morning.
     (e) He cleared the screen.   (f) The screen cleared.

The central disparity observed here follows, in fact, from the structures assigned in (9). In (9a), the lowest V is above the internal subject, or specifier, while in (9b), the lowest V is beneath the internal subject. Assuming that this arrangement corresponds to structural relations persisting in sentential syntax, verbs whose structure corresponds to (9a) will necessarily be transitive, since the verb will necessarily assign case to the internal subject (surface object). By contrast, verbs whose lexical structure corresponds to (9b) will be intransitive if the higher V does not appear, transitive if it does (a free option). However, if the transitivity contrast follows from the structures assigned, we still face an explanatory task —namely, that of explaining *why* denominal and de-adjectival verbs have the structures they do, rather than having entirely parallel structures (as assumed in Hale and Keyser 1994, for example).

3. Toward a theory of argument structure

If the problems we have discussed here are due to the nature of the elements involved, i.e., to the properties inherent in the lexical categories, what *are* these

properties and how do they determine the observed limits on argument structure? We propose that the properties relevant here are defined in terms of the syntactic relations "subject" and "complement", corresponding to the two dimensions arrayed in (11) below:

(11)   The Lexical Categories:

	+ subject	− subject
+ complement	"P"	"V"
− complement	"A"	"N"

The informal "feature" notation employed here is intended to evoke the structural properties of the four categories defined. Thus, for example, the notation [+complement] corresponds to the structural fact that a lexical head so defined necessarily combines with another category which stands in the structural relation "immediate sister" to it —as in the structure depicted in (3) above, in which N stands in the complement (i.e., structural sister) relation to the head V. A formal representation of the [+complement] feature would be the structure itself. The notation [+subject] attached to a head is similarly structural. It is the relation which holds between a subject and a predicate; a head associated with the feature [+subject] projects a predicate and must, therefore, have a subject —as exemplified, for example, in (5), where N is the subject of the predicate A, and in (9a), where N_1 is the subject of the predicate formed by P and its complement N_2.

Within the cells of (11), we have included the traditional part-of-speech labels —in quotes, to reflect the fact that the correspondence between the traditional categories and the universal ones is not necessarily exact. In the system of universal lexical categories, putatively embodied is (11), there is a lexical category whose members do not take complements and, at the same time, are *predicates* (i.e., necessarily take a subject). This category is universal, we insist, but it is variously realized in the actual morpholexical categories of the world's languages. Thus, for example, this category is realized in English by the class of elements traditionally called "adjectives". But this morpholexical class, though recognized as distinct and coherent in many languages, is far from universal as a separate morpholexical category in languages generally. In many languages, the universal [−complement, +subject] category is realized by members of the class traditionally called "verbs", and in some, it is realized by members of the class "noun". In general, in what follows, when we use the term "adjective" or "A" in a technical sense, we will be referring to the *universal category* defined by the intersection of the properties [−complement] and [+subject], which may or may not correspond to a coherent and distinct morpholexical category of English or any other language. We also use the term in the traditional way, i.e., to refer to the morpholexical category, hoping that the ambiguity will not result in confusion. The same usage will hold for the other categories as well. Thus, we must say of Warlpiri, for example, that it has adjectives, in the technical or universal sense; and at the same time, it does *not* have adjectives in the traditional sense —adjectives in the technical sense are nouns in the tradi-

tional sense (i.e., they are nouns in Warlpiri morpholexical realization; cf. Simpson 1991). And we must say of Navajo, that it has adjectives in the universal sense, but these are realized morpholexically as verbs (cf. Young and Morgan 1987).

From these considerations, it follows that when we observe that a particular English adjective "takes a complement", as in *proud of one's children,* for example, we must assume that it is not an adjective in the universal sense, given the classification in (11). To determine its universal classification, we must examine its properties. We must determine whether the apparent complement is in fact a complement at the lexical representation. If it is, then we must determine whether the item is a verb or a preposition, the two relevant candidates.[2] It is not our purpose here to determine individual cases of correspondence disparity but merely to indicate that there are disparities and to assert that our primary focus is the universal system of lexical categories —these are, in and of themselves, un-ambiguous and clear, though the issue is often clouded by morpholexical factors of individual languages.[3]

Let us return now to the problem of explaining limitations on argument structure. In this connection, we first state, informally, two "principles" which are observed in the syntactic projection of lexical argument structure:

(12) Principles of Projection:
    (a) Full Interpretation.
    (b) Asymmetry (if A c-commands B, where A and B are at same level of projection, then B does not c-command A).

We suspect that these are derivative of the properties of the lexical categories, as set out in (11). For present purposes, however, we will treat the Principles of Projection as autonomous —(12a) requires that any maximal projection properly included in a lexical entry (i.e., dominated by a root lexical projection, verb, noun, etc.) be a subject or a complement; and (12b) requires sister relations to be binary.

4. Empirical consequences

With this background, we can suggest explanations for the restrictions on argument structure so far noted.

(2) This requires determining whether it takes an internal subject —the ill-formedness of **it prided/prouded her of her children* suggests, initially, at least, that *proud* is not a preposition, in the universal sense (see Hale and Keyser 1993, for discussion of related cases, i.e., unergatives and transitives). Thus, the conclusion, so far, is that it is a verb, in the universal sense. This is a tentative conclusion, however, since a number of factors not touched on here must be taken into consideration in reaching a final conclusion.

(3) It should be pointed out, of course, that the correspondence between universal and morpholexical categories, while not exact, is nonetheless quite regular. This can be seen by the relative success of "notional" principles of correspondence. Thus, "dynamic events" are normally verbs in both universal and morpholexical senses; "entity expressions" are normally nouns in both senses, and "birelationals" are typically adpositions (or semantic cases). The regularity is apparent also in cases of the type represented by Navajo and Warlpiri. "Attribute expressions" are quite consistently verbs and nouns, in the two languages respectively, with little if any deviation from these correspondence principles.

4.1. Unergatives have no causative alternant

Consider first the limitation on unergative structures of the type represented by (1) and (2). Whether "synthetic", as *sneeze* in (1a), or "analytic", as *make trouble* in (2a), unergatives share the lexical structure depicted in (3), consisting of a verb (V) and its complement, a nominal (N). The lexical structure of unergatives explains the ill-formedness of the causatives in (1b) and (2b). First, a noun is not a predicate (i.e., it is [–subject] in our informal feature notation), and therefore does not license a subject. And the verb (also [–subject], by hypothesis) likewise fails to license a subject, internal to the lexical projection.[4] Consequently, an unergative verb has no internal subject lexically and, consequently, cannot appear as the subordinate verb in the structure depicted in (6), the structure that would be required in the causative, as in the failed causatives (1b) and (2b). The structure of (6) violates the principle of Full Interpretation (i.e., (12a)), since the nominal occupying the inner specifier position is uninterpretable—it cannot function as a subject, there being no predicate in the structurally appropriate position; nor can it function as a complement, obviously. No such violation occurs in (5), of course, since the subordinate verb there takes an adjectival complement; an adjective requires a subject and therefore licenses the nominal N appearing in the specifier position projected by the verbal head. It follows, then, that both intransitive and transitive ("causative") alternants of de-adjectival verbs, like *clear* in (4a, b), are generally possible in English. The intransitive alternant lacks the upper (parenthetic) verb of (5), while the transitive includes that verb. The subject of the intransitive originates in the specifier position projected by the lower verb, while in the transitive alternate that position corresponds to the sentential syntactic object of the transitive verb. The subject of the transitive is external, being base generated in a position appropriate for predication (e.g., subject of a verbal small clause, or specifier projected by a locally c-commanding functional head, such as T(ense)).

4.2. On the nature of empty heads

We believe that the principle of Full Interpretation is also implicated in the ill-formed verbs of (7) and (8). In this instance, what is at issue is the fundamental nature of empty heads (e.g., empty V and P), assumed to be present at the initial representation of denominal and de-adjectival verbs of the type represented there. Consider first the simplest case, that of unergatives like *sneeze* and *calve* in (1a) and (7a). According to our view of this type, their lexical representation is abstractly that given in (3), where V represents an "empty" verb and N represents an overt noun

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(4) In "sentential syntax", of course, a verb is the *prototypical* predicator and all verbs are inherently capable of taking subjects there, whether raised from an *internal* position, in the case of unaccusatives, or base-generated in *external* position, in the case of unergatives and transitives. The capacity of a verbal projection to function as a predicate, we believe, is activated by an appropriate syntactic environment. This environment is most typically defined by the functional category T(ense), which assigns a "temporal reference", or T-value, to the verbal projection. Some lexical verbs may assign a T-value as well, as the verb *make* in the English causative construction —thus, the bare infinitive *leave* in *make John leave* functions as a predicate, licensing the subject *John*. By contrast, the verb *consider* does not assign a T-value to the verbal projection it governs— compare the ill-formed **consider John speak Spanish*, with a (bare infinitival) verbal small clause complement, and the well-formed *consider John intelligent*, *consider the idea off the wall*, in which the small clause complements are headed by inherent predicators.

(*sneeze* and *calf,* in the examples under consideration). We must assume that the empty V here is not a "zero morpheme", in the sense of Myers (1984) and Pesetsky (1994), as it is crucially different from the kind of empty category which persists in the derivation of morphologically complex forms and into sentential syntactic representation of linguistic structures. Rather, we assume, an empty lexical head is uninterpretable at PF and, accordingly, must be eliminated from the representation of lexical items. The process which eliminates an empty head is the process which we have referred to as "incorporation", whose effect is to merge the phonological matrix of the overt complement with the empty phonological matrix of its governing sister, the host. This is not incorporation in the widely accepted sense (cf. Baker 1988), as it is driven entirely by phonology, the requirement that an empty lexical head be supplied with a phonological matrix and, thereby, to be interpreted at PF. However, we imagine that the precondition for the required merger of phonological matrices is head movement of the type generally associated with incorporation. Accordingly, a configuration of the sort pictured in (13) below presumably derives from the basic unergative structure (3), with N dominating the phonological matrix corresponding to the noun *sneeze* while V dominates the empty matrix [ ]:

(13)

$$
\begin{array}{c}
\text{V} \\
\diagup\quad\diagdown \\
\text{V}\qquad t_n \\
\diagup\ \diagdown \\
\text{V}\qquad\text{N} \\
|\qquad\ | \\
[\ ]\qquad[\text{sneeze}]
\end{array}
$$
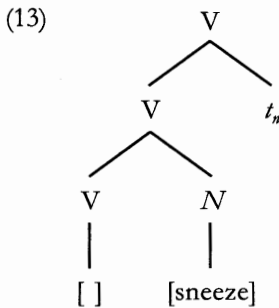
We imagine further that the merger of the resulting compounded (empty verbal and overt nominal) matrices into a single phonologically interpretable one —as in (14)— is automatic, so that the verb is no longer "empty" in the sense relevant to Full Interpretation at PF:

(14)

$$
\begin{array}{c}
\text{V} \\
\diagup\diagdown \\
\text{V}\qquad\text{N} \\
[\text{sneeze}]
\end{array}
$$
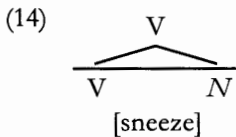
A crucial assumption here is that lexical items must satisfy Full Interpretation at PF, which means that "empty heads" must be absent from lexical representation at that level. We take this to mean that incorporation must take place instantly when an empty head is composed with its complement. From this, it follows at once that the subject of an unergative verb cannot incorporate, as in the ill-formed (1b), (2b), and (7b, c). Since an empty head must fill its phonological matrix immediately, it must do so from its complement. Its subject, an external

argument, is entirely out of play. The same is true in the case of de-adjectival verbs. In this case, the subject is internal to the lexical projection, but it is still out of consideration, since incorporation must be from the complement, not from the specifier, under the assumption that the phonological interpretation of empty heads is immediate.

The ill-formed sentences of (8) are to be explained in a similar way, given an appropriate additional assumption. Let us consider (8g) first; this is ill-formed on the interpretation according to which the sentence means 'he made the spear straight', or the like. The relevant structure, abstracting away from incorporation, is (9b), repeated here as (15):

(15)

$$
\begin{array}{c}
\text{(V)} \\
\diagdown \\
\text{(V)} \quad \text{V} \\
\diagdown \\
N \quad \text{V} \\
\diagdown \\
\text{V} \quad A
\end{array}
$$
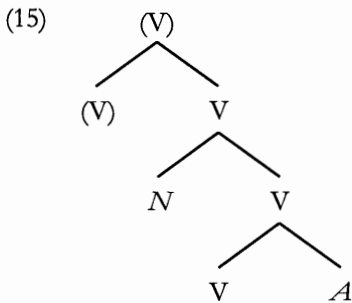
The hypothetical verb *spear* of (8g) is produced by incorporating N into the higher verb, an impossible incorporation. It is impossible because that verb must incorporate its *complement*. And its complement is not N but the lower V: The assumption required here is that head movement to a governing host verb is restricted to the *head* of the complement of that verb (cf. the Head Movement Constraint of Travis 1984, and Baker 1988). No other head is "visible" to the governing verb. Therefore, a proper derivation —yielding a sentence like (8f), with the de-adjectival verb *straighten*— necessarily procedes from the lowest verb-complement structure. Accordingly, V combines with its complement A:

(16)

$$
\begin{array}{c}
\text{V} \\
\diagdown \\
\text{V} \quad A \\
| \quad\quad | \\
[\ ] \quad [\text{straight}]
\end{array}
$$
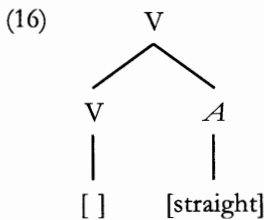
Being empty, V incoporates its complement, A, in order to fill its phonological matrix:[5]

(5) We will have something to say at a later point about the suffixal morphology *-en* which appears on this and many other de-adjectival verbs of English; and similarly for the voicing alternation exemplified by nominal *calf* and verbal *calve* in (7a-c). For present purposes, we treat verbs like *straighten*, with an overt suffix, as being essentially the same in character as verbs like *clear*, which lack any derivational morphology. In both cases, an underlyingly empty matrix is required to be filled in order to satisfy the principle of Full Interpretation.

(17)

```
                V
              /   \
           V        \
         /___\        t_a
        V     A
      [straight]
```
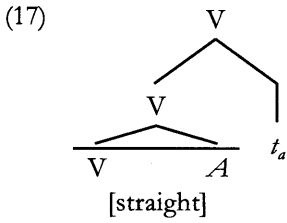
Since this verb has an adjectival complement, which requires a subject, it must project a specifier position so that predication can be expressed, guaranteeing that both *N,* functioning as the required subject, and *A,* represented now by the chain defined by head movement, satisfy the requirement of Full Interpretation:

(18)

```
                V
              /   \
           N        V
                  /   \
               V        \
             /___\        t_a
            V     A
          [straight]
```
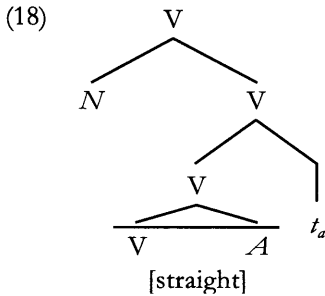
This is the argument structure of the intransitive *straighten,* as in *the spear (finally) straightened,* and in general this is the structure shared by intransitive de-adjectival verbs, like *clear* in (10f) above. The transitive alternant involves a higher empty V. The derived verb of (18), being phonologically overt, would be in the appropriate position to incorporate into a higher empty verb sister to it (i.e., sister to its maximal projection) —corresponding to the parenthesized matrix verb of (15). The phonological matrix of this higher verb would then be filled, by virtue of incorporation, giving (19), and thereby satisfying the Principle of Full Interpretation:[6]

(19)

```
                       V
                    /     \
                 V           V
               /___\       /   \
              V     A     N       V
            [straight]          /   \
                              t_y     t_a
```

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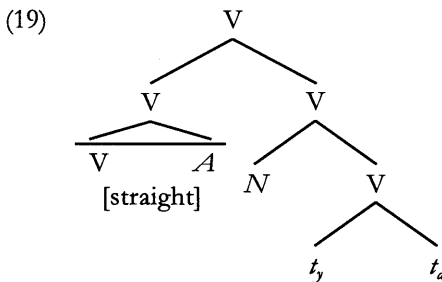
(6) This structure is less complex than it should be on the view that incorporation is a kind of adjunction. We assume that the overt verb simply substitutes for the empty verb in this case, giving the structure pictured in (19), without an additional "adjunction structure". This "pruning" effect may simply be the natural outcome of "incorporation as *substitution",* as opposed to adjunction (cf. Chomsky 1994). Other conceptions of derived transitives are possible, of course, and the abbreviatory practice adopted here may have to be abandoned, particularly when the semantic consequences of the transitivity alternation are fully considered.

The argument structure of transitive *straighten,* i.e., (19), has the verb in the raised position required for accusative Case assignment to N in sentential syntax. By hypothesis, the higher verb, now overt, takes a verbal complement, dominating t_{v}. Since the latter is not a predicate (cf. (11) above, where the category "V" is [−subject]), it does not license the higher verb itself to project a specifier. Accordingly, the subject of transitive *straighten,* and of all transitive de-adjectivals, is external and therefore required in sentential syntax but absent in the lexical projection of argument structure.

Returning now to (8g), the argument structure exemplified there is impossible, we maintain, because the only conceivable derivation of a transitive verb like *straighten* is that according to which the higher verb incorporates its *complement,* as in (19), i.e., the argument structure of the verb of the well-formed (8f). The internal subject, N, is not the complement of the higher verb —it is therefore not visible to the higher verb and is bypassed in the process of incorporation. The ill-formed argument structures of (8b) and (8e) receive a parallel explanation. For present purposes, we will consider just (8b), repeated here as (20):

(20) *They appled in the box.
   (In the sense: "they put apples in the box", "they boxed apples".)

The relevant abstract representation of the argument structure relations here is as in (9a), repeated as (21), in which V is empty, N_{1} corresponds to the noun *apple* and the prepositional constituent following that noun corresponds to the phrase *in the box:*

(21)

```
              V
            /   \
          V       P
                /   \
             N₁      P
                   /   \
                  P     N₂
```
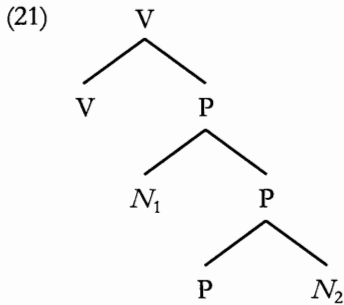
The derivation which gives rise to (20) above is illicit, for the reasons just discussed. That sentence is presumably derived by incorporating the noun *apple* into the matrix V. However, N_{1} *(apple)* is the subject of the prepositional predicate (i.e., the "internal" subject of the verb); it is not the complement of the verb. The only possible verb-forming derivation here is that in which P, the true complement of V, incorporates to give the latter overt phonological realization. It happens, of course, that English does not freely incorporate overt prepositions (unlike languages of the type discussed in Craig and Hale 1988, for example), so there is no possible derivation based on the structure underlying (8b) —hence, also, *they inned apples the box.* However, (21) does correspond to a highly productive lexical type in English,

namely, the location and locatum verbs (cf., for example, (10a) and (10c) above, and (22) below).

The denominal location verb *box,* as in (22) represents the class whose members have the argument structure (21), with the overt noun *(box,* in this instance) in the position corresponding to N_2 with V and P empty, and N_1 an argument variable fully realized as a nominal expression in sentential syntax *(the apples* in this instance).

(22) They boxed the apples.

The empty P will, of course, require incorporation to satify Full Interpretation at PF—that is to say, P must incorporate its complement N_2 *box.* And the empty V must likewise incorporate its complement, P. We understand this to mean that V incorporates the head of the P projection. This, in the example at hand, now has the form $[_P [_N box]]$, order immaterial, by virtue of the incorporation of *box* into the once empty P. This complex is phonologically overt and, accordingly, satisfies Full Interpretation, not only in relation to the empty P, but in relation to the empty V as well, once incorporation takes place there —in both cases, an empty phonological matrix is eliminated through merger with the matrix associated with the noun *box.*

4.3. Transitivity alternations

The sentences of (10) above exemplify an asymmetry distinguishing the class of de-adjectival verbs, like *clear, narrow, straighten,* from the class comprised of the locatum and location verbs, like *saddle, salt, shelve, box,* Members of the former class have both intransitive (inchoative) and transitive (causative) forms, as in (23a, b):

(23) (a) The broth thickened.   (b) The cook thickened the broth.

But members of the second set are transitive only:

(24) (a) She harnessed the mules.   (25) (a) He crated the pears.
  (b) *The mules harnessed.   (b) *The pears crated.

This distinction follows, given a certain auxiliary assumption, if we take (9a, b), repeated here as (26a, b), to be the relevant lexical argument structure representations:
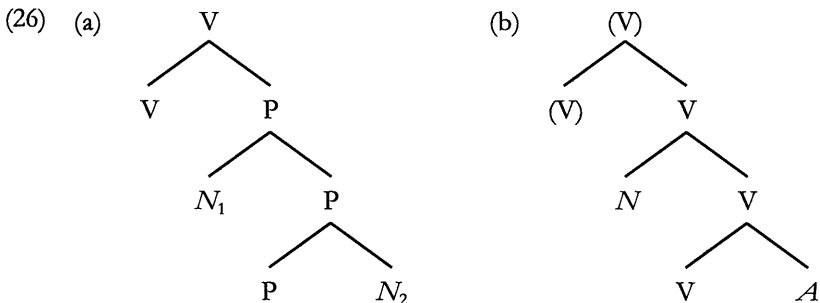
In the argument structure associated with locatum and location verbs, i.e., (26a), the internal subject N_1 is c-commanded by the verb of the construction. If we make

the assumption that this arrangement persists into sentential syntax, then we account for the consistent transitivity of these verbs, since the internal subject is in the canonically Case-marked position in relation to the verb —it is, in fact, in an object position in sentential syntax, being minimally c-commanded by the verb. De-adjectival verbs, on the other hand, are associated with the argument structure depicted in (26b), with the internal subject in a position superior to that of the relevant (lower) verb of the configuration —i.e., N is outside the c-command domain of the verb there and, therefore, it "escapes" accusative case marking. Other things being equal, the internal subject will raise to an appropriate functional specifier position and there assume the role of sentential syntactic subject. To be sure, if the intransitive structure appears as the complement of a higher V, parenthetic in (26b), the internal subject will appear as an object in sentential syntax, as in (23b).

This is an account of the transitivity asymmetry, but it is not an explanation. The transitivity facts follow from the *structures* attributed to the two classes of verbs. We ask now whether there is a reason for these structural assignments. Do they follow from fundamental properties of the categories, for example? We think they do.

Consider first the class of de-adjectival verbs. According to (11) above, adjectives are predicates and they do not take complements —this is what distinguishes them from the other categories, and this is what accounts for the structures in which they can appear. An adjective, being a predicate, must take a subject. But its subject cannot appear *within* the adjectival projection itself, as in (27), since the configuration this would imply —with N sister to A° within the A projection— is that of a head and its *complement,* and adjectives do not take complements, by hypothesis:[7]

(27)
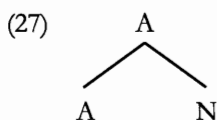
Therefore, the adjective must find its subject in the specifier of the higher category which governs it. Here, the relevant higher category is the verb which selects the adjective as its complement. The configuration which this suggests is (28):

(28)
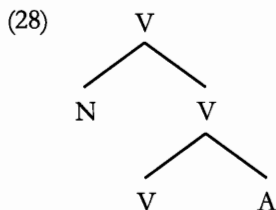
This is the prototypical intransitive structure associated with the class of so-called "unaccusative" verbs —it corresponds to the inner verbal projection of (26b)

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(7) We are assuming here that there is no autonomous "specifier" position. A specifier position is present only if the head of the relevant construction combines with a complement (cf. Chomsky 1994) for a related conception of syntactic projections.

above, in which the principal verb is lower in the structure than the internal subject. The transitive variant, of course, results when another, higher verb selects the unaccusative. This accounts for the transitivity alternation which characterizes de-adjectival verbs in general. The alternation, or at least the existence of an intransitive variant, follows directly from the essential nature of the category A.

Prepositions, by contrast, take complements and form predicates. This means, we assume, that their subject can be internal to their own projections. In fact, since this is a matter of *projection,* it is perhaps necessarily the case that the category P, once it combines with its obligatory complement (N_2), projects a specifier position (N_1) to satisfy the subject requirement:

(29)

$$
\begin{array}{ccc}
& P & \\
N_1 & & P \\
& P & N_2
\end{array}
$$
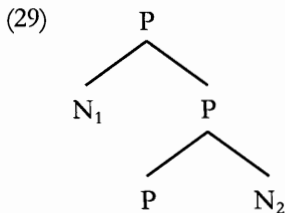
This is, so to speak, a "lexical small clause" headed by P. The corresponding derived verb involves the slightly more complex structure (26a), of course. Where the V is empty in (26a), it will incorporate its complement P (itself a complex head resulting from the incorporation of N_2). Since N of (26a) is in the canonical object position (in sentential syntax), the verbs involving this structure will be transitive, assuming of course that the configuration (26a) persists —and we maintain that it does. If this is correct, then it follows from the essential nature of the category P, which permits, and requires, its subject to appear *within* its own categorial projection and therefore in the c-command domain of the verbal head.

5. Overt derivational morphology

In English, an extraordinarily large number of derived verbs belong to the type sometimes said to involve "zero derivation", i.e., unassociated with overt deriva-tional morphology. Most denominal verbs fit this description, the derived verb being phonologically identical to the putative source noun, e.g., *box, corral, bottle, saddle, harness,* and so on. Some de-adjectival verbs are likewise of this type, e.g., *clear, narrow,* and *thin.* This observation accords well with the idea that incorporation is motivated by the very fact that the verb is basically empty, i.e., is associated with an empty phonological matrix. Incorporation is required in order to satisfy the Full Interpretation requirement.

The situation is not entirely straightforward, however, since many denominal and de-adjectival verbs involve what appears to be overt derivational morphology, most prominently, perhaps, the prefix *en-,* the suffix *-en,* or both, as in *encase, enlarge, thicken,* and *embolden.* Let us suppose that *overt* affixal derivational morphology involved in the projection of lexical argument structures such as these implicates the very principle of Full Interpretation which drives the process of incorporation in the

derivation of verbs from phonologically *empty* verbs. Suppose, for example, that a lexical derivational prefix, like English *en-*, consists not merely of the segmental representation (plus, perhaps, a hyphen to represent its prefixal status) but rather of the overt morpheme *in combination with* an empty phonological matrix [ ] to its right; correspondingly, a derivational suffix consists in an overt morpheme in combination with an empty matrix to its left (cf. Keyser and Roeper 1984):

(30)   (a) en[ ].   (b) [ ]en.

Accordingly, the derived verbs of (8f) and (23b), *straighten* and *thicken,* are not, as implied heretofore, based on underlyingly empty verbs, strictly speaking, but rather on verbs of the form depicted in (30b). However, we maintain, verbs of this form enforce incorporation in the same sense as before, since the empty matrix must be realized phonologically in order to satisfy the principle of Full Interpretation.

In the following subsections, we consider a language in which most derived verbs involve overt derivational morphology, i.e., 'O'odham —Pima and Papago of southern Arizona and northern Sonora (cf. Zepeda 1984). Our purpose in this is a limited comparative one of assessing the extent to which derived verbs in 'O'odham conform to the principles which appear to limit derived lexical argument structures in languages like English, in which "zero-derivation" is prominent. If the suggested principles are replicated here, then we have some limited indication that they are in force generally in limiting lexical argument structures, derivations, and diathesis alternations.

5.1. 'O'odham derived verbs

In this subsection, we exemplify a small set of 'O'odham derived verb types which appear to us to be relevant to the question at issue, leaving theoretical discussion for 5.2. We begin with verbs of manufacture and creation.

(31)   Derived verbs of production:
  (a) *ki:* 'house'   *ki:t* 'build a house'   *ki:cud* 'build × a house'
  (b) *hoa* 'basket'   *hoat* 'make a basket'   *hoacud* 'make × a basket'
  (c) *ga:t* 'bow'   *ga:t* 'make a bow'   *ga:cud* 'make × a bow'

In the usage of interest here, verbs of the type represented by *ki:t* 'build a house' are syntactically "intransitive" in the sense that they normally take a subject, and no object. They are transparently formed from nouns, and it is natural to assume that they are derived by incorporation, the suffix *-t* being the surface reflex of a verb —'make, build'— which incorporates its underlying object. This idea is encouraged somewhat by the observation that a "floated" quantifier associated with the incorporated noun may appear —stranded, so to speak, in the process:

(32)   'A:ñi   'ant   o   hema   ki:-t.
       I   AUX1   FUT   one   house-MAKE.
       'I am going to build a house'.

Verbs of the type represented by *ki:cud* 'build × a house' are, syntactically speaking, transitive. Their syntactic object, represented in the gloss by the variable *x,*

corresponds to the semantic relation "recipient" or "beneficiary". As in the case of the simpler verbs of manufacture, incorporation of an underlying direct object (semantic "theme") is suggested —the "floated" quantifier *hema* 'one' is possible here as well. The meanings of the two verb forms —e.g., the simple verb of manufacture *ki:t* and the corresponding benefactive or applicative *ki:cud*— are related in an entirely regular way. With verbs of the second type, the recipient or beneficiary argument (the syntactic object) is represented not only by an appropriate nominal phrase but also by object agreement (*ha-* in this case):[8]

(33) 'A:ñi   'ant   o   hema   ha-ki:-c   g   'a'al.
     I   AUX1   FUT   one   3p-house-BEN   ART   children.
     'I am going to build the children a house'.

The derivational suffix appearing in the verb of (33) is identical in form to the causative of (34a-c), which shares the causative derivational function with the suffix *-id* of (34d-f):

(34) Causatives:

(a)	*mer*	'run (e.g., car)'	*melcud*	'make x run, drive x (car)'.
(b)	*him*	'move'	*himcud*	'make x move'.
(c)	*heum*	'get cold'	*heumcud*	'make x cold'.
(d)	*cexaj*	'rise'	*cexajid*	'raise x, lift x'.
(e)	*huruñ*	'descend'	*huruñid*	'lower x'.
(f)	*ha:g*	'melt'	*ha:gid*	'melt x'.

In contemporary 'O'odham, the two ending exemplified here (*-cud* and *-id*) are the principal ones involved in deriving the transitive (or "causative") form of a verb —the choice between them is now essentially a lexical matter. The two verb forms differ in the expected way— the subject (semantic "theme") of the intransitive corresponds to the object of the transitive; and the external (subject) argument of the transitive is typically an "agent":

(35) Ma:gina   'o   mer.
     car   AUX3   run.
     'The car runs/is running'.

(36) 'A:ñi   'ant   o   mel-c   g   ma:gina.
     I   AUX1   FUT   run-CAUS   ART   car.
     'I am going to run/drive the car'.

Somewhat different morphology is involved in deriving active verbs from statives (or adjectives):

(8) The loss of final [ud] from the verb ([ki:cud] → [ki:c]) is by perfective truncation, a standard feature of regular verbs in 'O'odham, affecting as well the other causative ending *-id*, other derivational suffixes, and basic verbal roots. In reality, it is believed, truncation is deletion of a final underlying CV, the vowel preceding this being reduced or deleted through the operation of another process. See Hill and Zepeda (1992) for a discussion of truncation and "demoraicization".

The orthography employed in 'O'odham examples here departs from the official usage in two respects, for typographic convenience: the apico-alveolar (slightly retroflexed) stop is represented by /r/, the Tepiman ancestral form, and the retroflexed apico-domal fricative is represented by /x/.

(37) Adjectives and de-adjectival verbs:
    (a) *wegï* 'red' *wegi* 'redden' *wegi(ji)d* 'redden x'.
    (b) *moik* 'soft' *moika* 'soften' *moika(ji)d* 'soften x'.
    (c) *ge'ej* 'big' *ge'eda* 'get big' *ge'eda(ji)d* 'enlarge x'.

The verbs of the second column are "inchoatives", while those of the third column are the corresponding transitives (or "causatives"); the subject of the inchoative corresponds to the object of the causative, as expected:

(38) Hogï 'o s-moik.
    leather AUX3 POS-soft.
    'The became soft'.

(39) Hogï 'at moika.
    leather AUX3 soften.
    'The leather became soft'

(40) 'A:ñi 'ant o moikad g hogï.
    I AUX1 FUT soften ART leather.
    'I will soften the leather'.

'O'odham also has derived locatum verbs, paralleling English verbs of the type represented by *saddle, salt,* etc.

(41) Locatum verbs:
    (a) *'on* 'salt' *'onmad* 'salt x, put salt on x'.
    (b) *hialwui* 'poison' *hialwuimad* 'put poison in/on x'.
    (c) *hogï* 'leather' *hogimad* 'put leather on x'.
    (d) *si:l* 'saddle' *si:lrad* 'put a saddle on x, saddle x'.
    (e) *xu:xk* 'shoe' *xu:xkrad* 'put shoes on x, shoe x'.
    (f) *xa:kim* 'hackamore' *xa:kimrad* 'put a hackamore on x'.

The difference between these two derivational endings correlates with the nature of the nouns involved —*mad* is for "materials", generally mass nouns, while -*rad* is for "individual entities", generally count nouns. The derived verb is transitive, with the syntactic object corresponding to the entity which, by virtue of the process denoted by the verb, comes to "have" or "be with" the material or entity denoted by the incorporated noun:

(42) 'A:ñi 'ant o 'onmad g ñ-hugï.
    I AUX1 FUT salt ART my-food.
    'I'm going to salt my food'.

(43) Heg 'at o xu:xkrad g ñ-xoiga.
    he AUX3 FUT shoe ART my-pet.
    'He's going to shoe my horse'.

Our final example illustrates the use of the derivational suffixes -*cud* and -*id* (compare (34) above) in the formation of applicative, or benefactive, verbs:

(44) Applicative (benefactive) verbs:
    (a) *kawkad* 'harden x' *kawkadacud* 'harden x for y'.
    (b) *xelin* 'straighten x' *xelñid* 'straighten x for y'.

    (c) *cu'a*   'grind x (e.g., corn)' *cu'id*   'grind x for y'.
    (d) *ga'a*   'roast x'   *ga'id*   'roast x for y'.

The two transitivizing derivational endings combine here with simple transitives to form double object verbs. The "additional argument", corresponding to *y* of the gloss, bears the object role in syntax —semantically, this argument is the "beneficiary" or "recipient". The original object, i.e., *x* (the "theme"), is syntactically inert (for what is relevant here, at least):

(45) 'A:ñi   'ant   o   'i   xel   g   huk.
      I   AUX1 FUT PRT   straighten   ART board.
      'I am going to straighten the board'.

(46) 'A:ñi 'ant   o   'i   m-xeliñ   g   huk   ('a:pi).
      I   AUX1 FUT PRT 2s-straighten:BEN ART board (you).
      'I am going to straighten the board for you'.

We will content ourselves with this small sef of examples, turning now to the issue of whether overt derivational morphology of the type they represent exhibits behavior which is expected within a conception of lexical argument structure which accords the properties of (11) a fundamental theoretical role.

5.2. Constraints on derivational morphology

It is reasonable to propose that the morphologically composite 'O'odham verbs exemplified here are derived by incorporation, forced by the requirement of Full Interpretation, as suggested in the comparable English cases. Thus, for example, the verb *ki:t* 'build a house' has the initial lexical representation in (47) by hypothesis. Since the verb is a suffix —and therefore consists in part of an empty phonological matrix— it must incorporate its complement in order to satisfy Full Interpretation at PF as in (48):

(47)   V   (48)   V
              /\   /\
         V   N   V |
      /\ | ‾‾‾‾ t_i
                      N_i V
[ ]   -t   ki: [ki: -t]
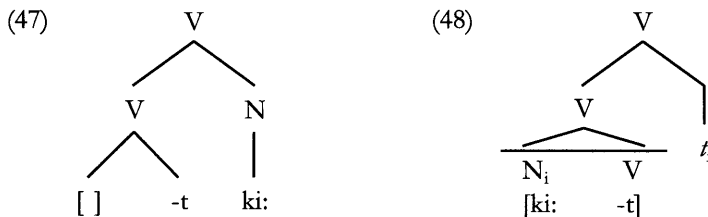
Similarly, the de-adjectival inchoative verb *moika* 'become soft' has the following initial structure, in which /-@/ stands for an underspecified vocalic segment (eventually [-a] in this instance) and in which XP represents the internal subject required by the adjective; here again, incorporation is forced, giving:

(49)   V   (50)   V

XP   V   XP   V

        V   A   V t_i

    [ ]   -@   moik   [moik   -a]
                                   A_i V
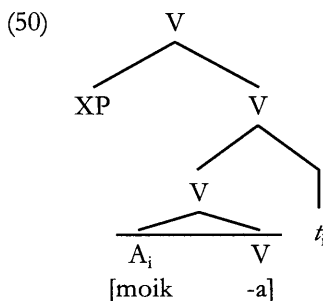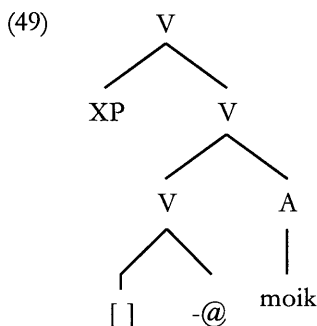
Let us imagine that the scenario suggested by (47)-(50) represents correctly that aspect of 'O'odham verbal morphology which is concerned with the phonological realization of derived verbs. In summary, an overt derivational affix has associated with it an empty phonological matrix which must be filled in order to satisfy the requirement of Full Interpretation in phonology. This is what forces incorporation. But this is not all that must be said, however, since in addition to the observed phonological behavior of roots and affixes, there are asymmetries and biasses which must be accounted for in the *syntax* of derived verbs. We migh expect that some of this behavior is explicable in terms of (11) and associated principles.

Consider, for instance, the diathesis-increasing derivational suffixes *-cud* and *-id*. These two together have what appear to be two distinct functions in 'O'odham. They derive "causatives", on the one hand, and "benefactives" (or double object verbs) on the other. They are causative, bringing an external argument ("agent" or "causer"), only when they combine with intransitive verbs, like those in (34a-f). When they combine with transitives, as in (44a-d), they form benefactives, bringing in an internal argument, the beneficiary or recipient. The suffixes have this function as well in forming the benefactive transitive counterparts of verbs of manufacture, as in (31a-c).

The problem is this. Why aren't these suffixes consistently simply *causative?* Might there be a systematic reason for this? Why doesn't *xelñid* mean 'have/make x straighten y', i.e., the causative? Why can't (46) mean 'I'm going to have/make you straighten the board?' And why doesn't *ki:cud* mean 'have/make x build a house?' And correspondingly, why doesn't (33) mean 'I'm going to have/make the kids build a house?' The explanation, we contend, comes from the fundamental nature of nouns and verbs, as set out in (11). Neither of these categories projects a subject in argument structure; hence, there is no source for the x in the hypothetical causative uses. The verb *xelñid* is based on the transitive verb *xelin* 'straighten x', already a "causative", based on the bound root *xel-* 'straight'.[9] The argument structure of this verb is as set out in (51):

---

(9) We are assuming for present purposes that this bound root is an adjective. This may be wrong, however. Since it combines with the suffix *-in* (an element which figures in the formation of many transitive verbs of "change of state") and forms with it a verb which is necessarily transitive, it is possible that *xel-* is a noun, functioning as the complement of P (in turn the complement of the matrix verb *-in*). There is, in fact, a noun *xel* in 'O'odham, meaning 'right, license' and therefore only tenuously related to the verb (51) synchronically. In its nominal use, *xel* is a free noun, not a bound root.

(51)

```
            V
          /   \
        V       V
        |     /   \
     [ ]in  XP      V
                  /   \
                 V     A
```
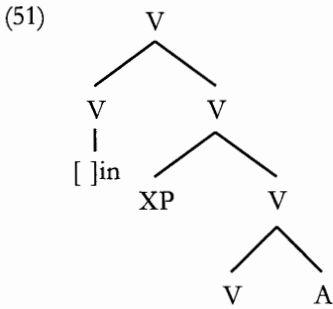
The internal verbal projection presents a specifier position, since the adjective, being a predicate, must have a subject to satisfy the principle of Full Interpretation, as formulated in (11). But the actual verb here, the transitive *xelin,* involves a higher verb, realized as the derivational suffix *-in.* This is the matrix head of the argument structure. Being a verb, and by hypothesis not a predicate in lexical argument structure, it does not project a subject. Thus further transitivization, by means of the suffix *-id,* cannot give rise to the causative, as this would require an internal subject in the immediately subordinate verbal projection. In other words, the hypothetical argument structure shown in (52) is impossible, since the intermediate verb cannot have a subject, there being nothing (no predicate) that forces its appearance:

(52)

```
              *V
            /    \
          V        V
          |      /   \
       [ ]id   V       V
               |     /   \
            [ ]in   XP      V
                          /   \
                         V     A
                         |     |
                        [ ]   xel-
```
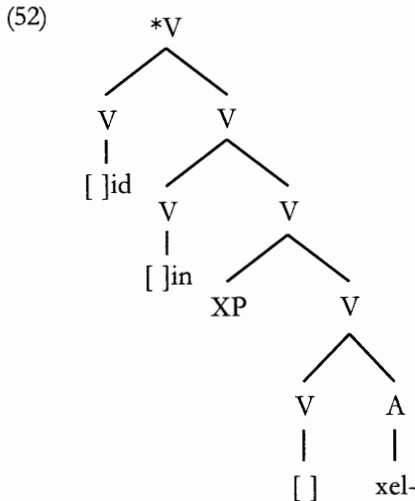
While incorporation itself could proceed to derive *xelñid* in this structure, and while it would in fact necessarily do so, in order to satisfy Full Interpretation, the structure is ill-formed, there being no subject for the intermediate V headed by [ ]in. That verb, being transitive, must have an external subject, an impossibility

here[10]. Essentially the same is true of *ki:cud.* This cannot be a causative based simply on the verb of production *ki:t,* because this verb, whose argument structure is represented in (47) and (48), does not have, and cannot have, an internal subject. Its head is V, and the latter's complement is N; neither category projects a subject in argument structure, in accordance with (11).

We can explain why *xelñid* and *ki:cud* cannot be causatives, but why can they exist at all? Why can they be benefactives? Our answer to this question is not, in our opinion, fully satisfactory as yet. We think, however, that it will be found in a theoretical framework like that developed in Hoffman (1991), according to which a benefactive (or applicative) predicator takes a canonical full predication complement which, by (11), must be a projection either of P or of A, the two [+subject] categories. We will limit our exemplification to the type represented by *ki:cud,* i.e., benefactive verbs of production, and we refer the reader to Hoffman (1991) for a fuller discussion of benefactives.

We have argued that the transitivizing suffixal verb *-cud* cannot take (47) as its complement, to form a causative, because its complement would in that case present no internal subject (corresponding to the syntatic object of the hypothetical causative). The argument structure of *ki:cud* cannot be as in (53), since the inner verbal projection cannot provide an internal subject, there being nothing there to force that:

(53)

```
                    V
                  /   \
              V          V
              |         /  \
          [ ]cud     V      \
                    /  \      \
                  /      \      t_i
                N_i       V
                [ki:     -t]
```
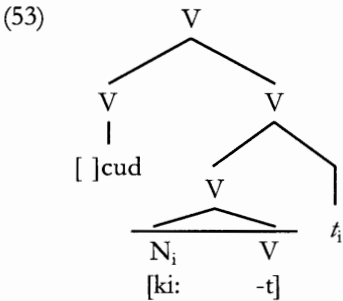
Suppose, however, that the benefactive verbs of production have the argument structure associated with locatum and location verbs, i.e., that of (9a) above. The argument structure representation of *ki:cud* would be as follows, under this assumption:

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(10) Ultimately, the ill-formedness of (52) is a sentential syntactic matter. The intermediate V must have a subject in sentential syntax —it cannot in this case, since the higher V intervenes, preventing it from receiving the T-value required to activate its predicational capacity.

(54)

```
                    V
                   / \
                  /   \
                 /     \
               V        P
              /\       / \
           [ ]cud    /   \
                   XP      P
                          / \
                         /   \
                        P     N
                              |
                             ki:
```
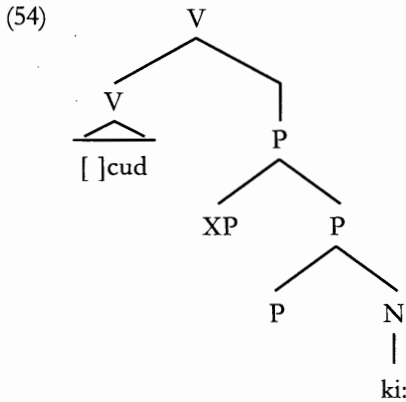
The internal subject, XP, is required by virtue of the lexically inherent predicational character of the category P, as registered in (11). The P itself, being empty, will incorporate its nominal complement *ki:;* and finally, the empty matrix associated with *-cud* will require incorporation of P, giving the derived verb *ki:cud*. This verb is grammatically transitive, of course, taking XP as its sentential syntactic object, is in the sentence (33) above.[11]

'O'odham derived de-adjectival and locatum verbs illustrate the central point here in a somewhat more direct manner. Verbs of the type represented by (37a-c) occur in pairs, intransitive and transitive, like the English verbs *clear* in *the screen cleared* and *she cleared the screen*. On the other hand, locatum verbs, like (41a-f) are transitive only, lacking any intransitive counterpart. How can this disparity be explained? Why is there no intransitive verb *'on-SUFF* meaning 'to get salty'? Or *jewer-SUFF* meaning 'get soiled, covered in soil'? These ideas can be expressed in 'O'odham, of course, but not with intransitive verbs of the suggested type. This follows from (11) straightforwardly. An adjective-based verb has a subject internal to its argument structure projection, necessarily, by virtue of the essential property of the category A (cf. (28) above, and for 'O'odham, (50)). Since an adjective cannot locate its subject within its own projection, its subject must appear in the specfier position of the immediately superordinate verb, as in (50). In the absence of further embedding, this gives the intransitive variant. The transitive variant is simply the causative, with the intransitive occurring as complement of a higher V, in this case *-(ji)d:*

(11) The "meaning" which can be associated automatically with (54) is correct, insofar as *ki:cud* is a benefactive verb, i.e., essentially a verb of "giving". Thus, the verb denotes an event in which an entity corresponding to the internal subject, XP, comes to "have" the entity denoted by the nominal complement, i.e., the "theme" *ki:*, through the agency of some other entity corresponding to the external subject. What is missing is the implication that the agent "made or produced" the theme. That is to say, the entailment relation which is reasonably said to hold between (33) and the simpler (32) is not expressed in (54). In Hale and Keyser (1994) we consider this to be a true problem, as yet not adequately addressed.

(55)

```
                    V
           ┌────────┴────────┐
        V                    
      ┌─△─┐                 V
      [ ](ji)d          ┌───┴───┐
                     XP          V
                             ┌───┴───┐
                           V          t_i
                         ┌─△─┐
                        A_i    V
                      [moik   -a]
```
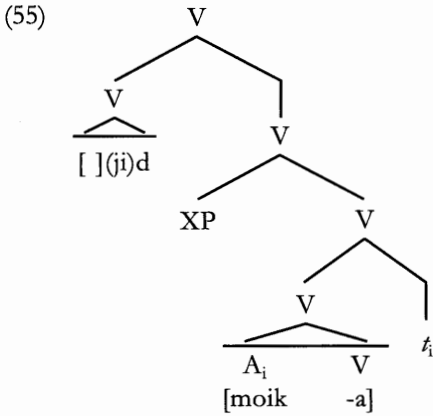
This is entirely consistent with the view that argument structure and diathesis alternations are limited by the essential nature of the lexical categories. The *lack* of a parallel transitivity alternation on the part of 'O'odham locatum verbs is likewise understandable in these terms. Assuming, as we have for English, that locatum verbs in 'O'odham are P-based, it follows that they project subjects which are internal to the P-projection itself. The verbal head which selects the P is therefore *above* the internal subject, as in the assumed argument structure of the 'O'odham verb *'onmad* 'to salt *x*, to put salt on *x*':

(56)

```
                V
        ┌───────┴───────┐
     V                   
   ┌─△─┐                 P
   [ ]mad           ┌────┴────┐
                  XP           P
                          ┌────┴────┐
                        P            N
                                     │
                                    'on
```
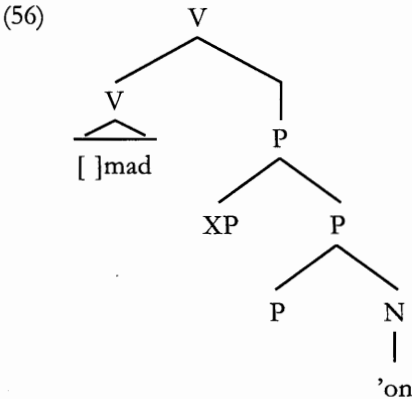
The derivation proceeds in the usual manner, forced by the principle of Full Interpretation in phonology. The aspect of (56) which is relevant here is the structural position of the internal subject XP. The verb locally c-commands XP, and under the default assumption that this structure will persist into sentential syntax, XP will bear the object relation there. There is no possibility of an intransitive alternant here, without application of some specific detransitivizing operation (such as passive or antipassive).

A final observation has to do with one of the processes involved in deriving transitive verbs from intransitives in 'O'odham. In (34) above, the suffixes *-cud* and *-id* are seen in the function commonly associated with the notion "causative". They

derive the causative form of intransitive verbs. Although we cannot establish this for each of the verbs in (34), we think it is reasonable to propose that the intransitives have an argument structure which contains an internal subject —they are, in other words, canonical unaccusatives. This is quite reasonable for verbs like *heum* 'to get cold' and *haag* 'to melt'. Our hypothesis, for better of worse, requires us to attribute to these verbs the same basic structure as that associated with de-adjectival verbs. From this it would follow that they exhibit the inchoative-causative alternation.

Not all 'O'odham intransitives behave in this manner, however. Some morphologically simple intransitive verbs combine with the suffixes *-cud, -id* to derive benefactives, not causatives:

(57) (a) *ñe'c*   'sing'   *ñe'icud*   'sing for x'.
      (b) *na:d*   'build a fire'   *na:jid*   'build x a fire'
      (c) *cikpan*   'work'   *cikpañid*   'work for x'.
      (d) *gikuj*   'whistle'   *gikujid*   'whiatle for x'.
      (e) *ku'ag*   'get firewood'   *ku'agid*   'get firewood for x'.
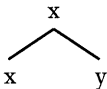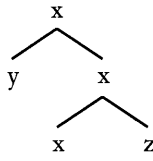
On the view that the intransitives here are in fact "unergative", their argument structure is that associated with the verbs of production —i.e., parallel to (47) above. It follows, then, that they would not have causative forms. As in the case of verbs of production, their transitive counterparts are necessarily benefactives.

6. A final observation on argument structure

In this paper, we have explored the possibility that the "nature of the elements" is responsible for the observation that argument structures are severely limited in their variety and "size". If this is actually true, we have only partially shown that it is true. Unconstrained recursion, for example, is not entirely eliminated, since the category P, as we have characterized it, could in principle permit recursion if P itself can appear as the complement of P. This does not seem to happen in argument structure, but we are not sure why it does not. It remains a problem for further research, research which may either support or destroy the ideas explored here.

In evaluating the central proposal advanced here, we find it necessary to constantly remind ourselves that the *categories* which are relevant to the theory are the *primitive* parts of speech, so to speak, and not necessarily the nouns, verbs, adjectives, and adpositions of a particular language, as these latter do not reflect the former with absolute perfection. This fact is obscured, perhaps, by the conveninet abbreviations N, V, A, and P. A more accurate notation would be the projections themselves, as in the first row of (58), in which x stands for a category associated with a specific argument structure and y, z stand for its arguments:

(58)   (a) x   (b)   x   (c) y / x   (d)   x

                         x   y   y   x

                                                                x   z

English	N	V	A	P
Navajo	N	V	V	N, P
Warlpiri	N	V	N	N, P

The first category has the property indicated, namely, it has no arguments—no complement and no specifier. The second category takes a complement, and no specifier. The third takes no complement but must be associated with an argument, its subject (this must be external to the projection of the category itself, a circumstance which follows from the fact that the category takes no internal argument, i.e., no complement). The final category takes both a complement and a specifier. The properties expressed in (58) correspond exactly to the features set out in (11) above. But it is these configurational properties, we maintain, which are the *true* defining properties.

Beneath the configurational representations appearing in (58), we present the predominant morphosyntactic realizations (N, V, etc) of these basic categories in three languages, English, the Athabaskan language Navajo, and the Pama-Nyungan language Warlpiri. There is cross-linguistic variation here, obviously. Even *within* a single language there is variability —the English "verb" *have* is probably a member of (58d), not (58b), for example; and English *weigh* and *cost* are probably "incorporating" varients of this same category. It is easy to find such "exceptions" in any language. So-called "psyche verbs" are notoriously variable in their morphosyntactic realization.

A related concern is that of *counterexamples*. Real counterexamples are of great value in linguistic research, since they can contribute to the perfection, or rejection, of a theory. And this represents an advance, of course. False, or apparent counterexamples, are also valuable, since their proper identification and explanation can help to support a theory. But the two sorts are distinct, and it is typically extremely difficult to distinguish the two. Counterexamples, of one or the other sort, to the proposal entertained here are manifold. Some are probably real and some are probably false. Our failure to express the entailment relation between (33) and (32) probably involves a true counterexample, one whose explanation will force a modification in the theory. On the other hand, there are many counterexamples which are merely apparent, due typically to a failure in the primary data. For example, while English *sleep,* we maintain, is an unergative, and therefore cannot have an internal subject and, therefore, no causative alternant (hence **we slept the child*), its favored 'O'odham translation *ko:x* readily forms a causative *ko:sid* 'put to sleep'. But this does not qualify as a counterexample, since the 'O'odham verb has a "change of state" use, unlike English *sleep* —*the child slept* does not have the same range of meanings as 'O'odham *koi 'at ga 'ali* 'The child slept/fell asleep'. The "change of state" variant, we maintain, has an internal subject, following from the fact that it involves the primitive category (58c), appearing as the complement (y) within (58b). English *sleep,* by contrast, involves (58a) in that function. A similar,

perhaps clearer, example of this sort of apparent counterexample is seen in the distribution of the Hebrew *hif'il* ("causative") binyan in relation to verbs meaning sleep —there is no *hf'il* form of the verb *f-n*, the verb which most closely approximates English *sleep*, but there is such a form for *r-d-m*, a verb which approximates the change of state variant of 'O'odham *ko:x*.

Failure in coverage, or "shortfall", is a type of counterexample. And in this sense, the class of constructions which we must recognize as counterexamples is large at this point —necessarily so, we feel, because the fundamental elements which we attribute to the theory are severely restricted and consequently poor in their ability to make distinctions which can be observed in virtually any collection of actual linguistic data. There is, in other words, a large "residue" which the present theory of argument structure fails to give an account of. Basically, we assume just two grammatical relations, complement and predicate —these derive the elementary categories of (58).[12]

Although we will continue for the present in our belief that this parsimonious system is correct, we are keenly aware of the impressive range of "argument structures" which it fails to accommodate.

We will mention one important type here, one variety of which involves the phenomenon called "conflation" by Talmy (1985), exemplified in (59):[13]

(59) (a) The kids ran into the room.   (c) Rizzuto slid into third base.
       (b) The horse jumped over the cattleguard.

The verbs of these sentences, and their like generally, represent the "conflation" of *action as means* ("running", "jumping", "sliding") and *movement to an end point* ("getting into the room, over the cattleguard, into third"). The problem which conflations of this type represent derives precisely from the fact that they appear to embody *two* concurrent event-like components. We are used to just one. It is tempting, and perhaps natural, to imagine that the argument structures of the verbs of (59a-c) are in fact composites of the unergative structure, as in (3) above, repeated here as (60a), and the structure associated with change of location, as in (9a), repeated as (60b) below:

(60) (a)   V   (b)   V
            /\   /\
          V   N   V   P
                                             /\
                                           N₁   P
                                               /\
                                              P   N₂

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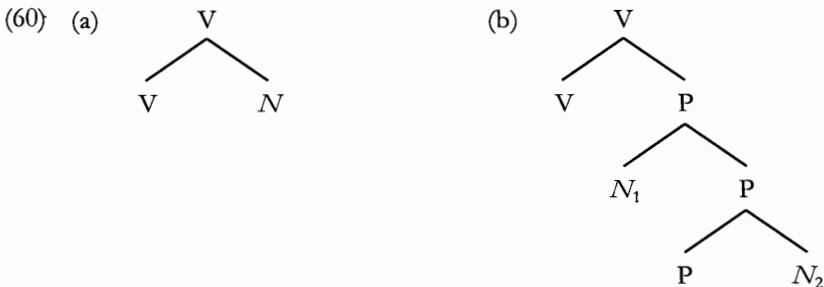
(12) Interestingly, these categories are the traditional four parts of speech, and the four defined by the feature system of Chomsky's "Remarks on nominalizations" (1970).

(13) We have used the term "conflation" to refer generally to "incorporation" involved in deriving denominal and de-adjectival verbs. Talmy's original usage, as we understand it, was restricted to manner-motion synthesis, and the like, as in the type under discussion here.

The first of these is associated with the simple unergative use of verbs like *run,* *jump,* and *slide,* while the second is the argument structure associated with verbs like *get* or *go* in verb phrases like *get into the room,* and the like. It is natural to think of the verbs of (59a-c) as composites of these two structures. Such a composite might, for example, be defined by means of a generalized transformation, substituting (60a) for the verb of (60b), giving the otherwise illegitimate (61) which, with appropriate overt elements, incorporations, and principles of interpretation would give derived verbs with meanings like *get into x running, bet over x jumping, get into x sliding,* etc.:[14]

(61)
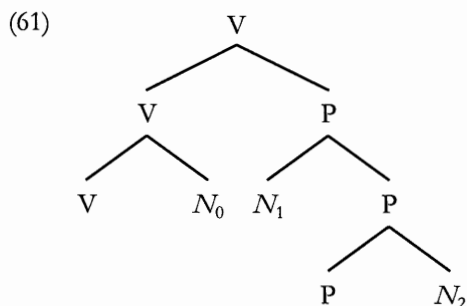
The same might be suggested for the benefactive constructions —e.g., *make Johnny a toy,* substituting *make a toy* at the point occupied by N_2 in (60b). In all such cases, it will be necessary to ensure that the external argument of the composite is related in a particular way (semantically) to each of the subcomponents. Thus, for example, in the benefactive *make Johnny a toy* the entity corresponding to the external subject both "makes a toy" and "does it for Johnny". This is not a particularly trivial problem, inasmuch as each among a variety of suggestive mechanisms to effect this "control" relation must be studied to determine whether it opens some "floodgate", subverting the original purpose of explaining the observed restricted nature of argument structure. It should be pointed out that this problem is not tied to the use of generalized transformations as suggested here, since "base generation" is not ruled out. Thus, for example, nothing prevents a VP of the type represented by *make a toy* from appearing as a complement to P (in place of N_2) in the basic argument structure representation (60b), Herein lies another tale, we are afraid. We do not fully understand yet what it is that limits the recursion of complements in the projection of lexical argument structures.[15]

(14) These have structures resembling, abstractly speaking, the structures of locatum or location verbs. They differ from these however, in that the P-projection is an overt "small clause". In sentential syntax As such, it enters into the conventional Raising construction—N_1 may raise to an appropriate external position, giving the s-structures of (59). By contrast, derived denominal locatum and location verbs do not have an overt small clause complement in sentential syntax and hence do not participate in the Raising construction; otherwise, *the books shelved* should be grammatical, contrary to fact (cf., the fully grammatical Raising construction *the books got on the shelf (mysteriously)*).

(15) We are reluctant to resort to a sentential syntactic explanation, such as the requirement that a nominal argument receive Case, tempting as this may be. Languages with multiple objetive Case marking (like Kichaga and

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Kinyarwanda, cf. Bresnan and Moshi 1990), do not, so far as we are aware, have morphologically simple verbs with recursive lexical argumental structures. To some extent, the more intimately *lexical* principle embodied in the EPP (Extended Projection Principle) is at work in limiting argument structure. If a verb gets no internal subject (i.e., does not inherit one from its complement), it must get an external subject. This principle averts forms like *sneeze the child, *make John trouble* (in the sense "cause John to make trouble"), but it does not prevent recursion of the category (58d), for example.

VERB INCORPORATION AND CAUSATION TYPES

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1. Introduction[1]

Causatives of transitive eventive verbs like *eat*, as in *Alice made Don eat some cabbage*, are invariably ambiguous between the interactive and circumstantial causation readings (see also Belvin this volume). The interactive reading is defined by the interaction between the causer and the causee. In this case, Alice acts on Don by either coercing or persuading him to eat the cabbage. This interaction is missing in the circumstantial reading, where the causer only sets up the situation, and lets the causee respond. In this case, Alice brings about the event of Don's eating some cabbage by merely manipulating the circumstances, and without acting on him in any way. For example, she might place small quantities of cabbage in his favorite meal, or she might tell him about some study that shows that eating cabbage lowers cholesterol.[2]

This ambiguity might appear to be purely pragmatic, but it is not. Each reading is blocked in a well-defined syntactic context: The interactive reading is blocked when unaccusative verbs like *arrive* and *appear* are causativized in languages that form causatives by affixation on a root verb, such as Turkish and Hungarian. In the following examples, the causer may not have forced the causee to arrive on time, nor may the magician have forced the sun to appear in the sky, a somewhat unusual but otherwise perfectly imaginable situation given that the subject is a magician.

(1) Turkish:
    Ahmet Ayşe-yi toplantı-ya   zaman-ı-nda   var-dır-dı
    A.-NOM A.-ACC meeting-DAT time-3SG-LOC arrive-CAUSE-PAST-3SG
    'Ahmet made Ayşe arrive on time for the meeting'

(2) The more familiar terms 'direct' and 'indirect' causation are confusing in cases of multiple causatives. In a causal chain containing intermediate causees that are omitted in the clause, the relation between the initial causer and the final element would be quite indirect even if each link is a case of interactive causation. For example, a situation where A causes B to cause C to eat D can be expressed as *A eat-cause-caused D to C* in Turkish, in which the relation between *A* and *C* is a case of indirect causation regardless of whether the intermediate links between A and B, and B and C are interactive or circumstantial.

(2) Hungarian:
A varázsló   megjelentette   a   napot   az éjszakai égbolton
the magician-NOM PERF-appear-CAUSE-PAST the sun- AC the nightly sky-LOC
'The magician made the sun appear in the night sky'

These causers may only create the circumstances in which the causee arrives on
time or appears in the sky. In (1), Ahmet may give Ayşe a ride or let her leave early,
but he cannot issue an order. In (2), the magician may create an illusion, but cannot
act on the sun itself.

The causative predicate, abstractly represented here as CAUSE, forms a single
word with the causativized verbs in the examples above. By contrast, CAUSE remains
a separate predicate in the periphrastic causatives of English and Greek, where
unaccusative verbs allow the interactive reading. In the sentences below, the causer
can act directly on the causee and force them to arrive on time or appear on stage.

(3) English:
Sue made Bill arrive on time for the meeting

(4) Greek:
O   maghos ekane   na emfanisti   to   kouneli sti   skini
the magician made-3SG SUB appear-3SG-SUBJ the rabbit at-the stage
'The magician made the rabbit appear on stage'

It will be argued in section 3 that the availability of the interactive causation
reading is determined by whether the incorporation of the lower verb into the
higher CAUSE is overt (morphological causatives) or covert (periphrastic causatives).

The circumstantial reading, on the other hand, is not available in the null
causative construction where verbs like *run* and *march* are transitivized in English.
This can be seen in the examples below, which have only the interactive reading,
i.e., the causer must act directly on the causee to force them into running, jumping,
or marching.

(5) a. Bill ran the horses around the corral
     b. Sue jumped the lions through the hoop
     c. The commander marched the soldiers to the stadium

It is not possible in (5) that Bill runs the horses around the corral by creating a
running path and then scaring the horses, neither can Sue jump the lions through
the hoop by starting a fire in their cage and placing the hoop in front of the gate,
nor can the commander march the soldiers to the stadium by giving them some
incentive or pleading with them. All these would be instances of circumstantial
causation, which is allowed in the periphrastic construction with *make*.

(6) a. Bill made the horses run around the corral
     b. Sue made the lions jump through the hoop
     c. The commander made the soldiers march to the stadium

As will be shown in section 4, the distribution of the circumstantial reading is
determined by whether or not CAUSE has phonetic content.

This paper is organized as follows. Section 2 derives both the interactive and circumstantial readings by associating the Patient role of CAUSE with different constituents. Section 3 shows how the syntactic level of verb incorporation into CAUSE determines the availability of the interactive causation reading, while section 4 establishes the same type of connection between the null versus overt morphology of CAUSE and the availability of the circumstantial reading. The discussion ends in section 5 with a brief note on the implications of this analysis in terms of verb typology.

2. The Causative Architecture and the Patient Role

Causation is a relation between a causer (an individual or an event) and a caused event. It is mediated by the predicate CAUSE, which is assumed here to be semantically and syntactically constant across languages although it varies with respect to its particular morphological realization in a given language. It surfaces as an affix in the cases of Turkish -*DIr*- and -*t*-,[3] Hungarian -*tEt*-, and Japanese -*(s)ase*-, but as a free-standing verb in the cases of English *make*, Greek *kano*, and French *faire*. In both types, the causativized verb is incorporated into CAUSE in the LF representation in order to form the verbal complex V-CAUSE, which allows the causation and the caused event to be interpreted as a single unified (complex) event. In morphological causatives, this verb incorporation takes place in the overt syntax, but it is covert in periphrastic causatives.

The predicate CAUSE takes a DP or a CP specifier depending on whether the causer is an individual or an event. Crucially, it selects different complements in different languages, determined by the ability of structures with multiple causatives to duplicate a Case. Turkish prohibits any instance of Case duplication, restricting the occurrence of nominative, accusative, dative, and *by*-phrase arguments to one per clause, regardless of the number of CAUSE predicates the clause might contain.

> (7) Ahmet Ayşe *tarafından*   Ali-*ye* Suna-*yı* koş-tur-t-tur-du
> A.-NOM A   *by*   A.-DAT S.-ACC run-CAUSE-CAUSE-CAUSE-PAST-3SG
> 'Ahmet made Ayşe make Ali make Suna run'

Having exhausted all suitable Cases and postpositions, the clause in (7) would fail to support a fifth overt argument when another causative layer is added into the structure.[4] This means the complement of CAUSE in Turkish is a phrase that is small enough to exclude all Case licensing projections, i.e., it is a VP. The situation is very different in English, where each iteration of CAUSE (*make*) provides an additional accusative Case.

> (8) Bill made *them* make *him* make *us* eat some cabbage

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(3) Capital letters indicate segments with phonological alternates due to voicing assimilation and vowel harmony. The distribution of -*DIr*- and -*t*- is phonologically determined: -*t*- immediately after vowels and the liquids /r/ and /l/, and -*DIr*- elsewhere. The irregular forms -*Ar*- and -*Ir*- occur only with a limited number of verbs that are lexically specified.

(4) It would, however, tolerate as many causative morphemes and null (pro) causees as one is willing to add.

The duplication of the accusative indicates that CAUSE takes a complement that contains the accusative licensor AgroP in English.[5]

Apart from the causer and the caused event, it is not clear whether CAUSE requires a third argument that corresponds to the causee. The interactive reading clearly demands a prominent causee in the structure, suggesting that CAUSE may be a three-place predicate. On the other hand, the circumstantial reading is strictly a relation between the causer and the caused event that does not involve any causee, and this suggests that CAUSE may be a two-place predicate. Alsina (1992) resolves this conflict by assigning the same lexical frame to both CAUSEs and derives these two readings by associating its Patient role with alternating arguments. He argues that CAUSE is a three-place predicate that takes an Agent, a Patient, and a predicative argument that stands for the caused event. The Agent role associates with the causer, and the Patient role 'fuses' with one of the arguments inside the predicative category.

(9)   CAUSE < *ag, pat*, PRED <...θ...>>
          |_____|

If Patient fuses with the external argument of PRED, i.e, the causee, the result is the interactive causation reading (Alsina's 'variant 1'). If it fuses with the internal argument of PRED, the interpretation is similar to the circumstantial causation reading (Alsina's 'variant 2').

The appealing aspect of Alsina's (1992) proposal to associate the Patient of CAUSE with alternative consituents is that it makes use of the affectedness component of the Patient role in deriving these distinct readings. The Agent of CAUSE initiates the causation by acting on the constituent that becomes the Patient of CAUSE in both readings. It appears, however, that a more accurate interpretation of the formulation in (9) is that it depicts a two-place predicate rather than a three-place predicate, since it provides only the Agent and Patient roles, and crucially, the Patient role itself does not introduce any novel argument. Instead, it associates with some argument that is already generated inside the predicative category. So (9) is a combination of two frames: a thematic frame where the Patient has no corresponding argument, and a subcategorization frame in which the predicative element PRED has no corresponding thematic role. The divergence between the categorial selection and thematic licensing in the interactive reading creates the illusion of CAUSE being a three-place predicate.

Although it is an unconventional move, Alsina's separation of categorial selection and thematic licensing is fully compatible with frameworks that treat thematic relations as purely interpretive phenomena, such as Gruber's (1965) original work, and especially, Jackendoff's (1972, 1990) theory (for related ideas see some of the papers in this volume, e.g. Belvin, Davis, Demirdache and Minkoff).[6] This paper

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(5) Some languages provide intermediate options. For example, French can duplicate dative and *by*-phrase licensors, but not the accusative, while Nweh (Grassfield Bantu) duplicates nominative phrases. It appears that the unmarked option for CAUSE in the UG is a VP complement, and language learners posit a larger constituent when they encounter overt evidence in the form of clauses with multiple causatives.

(6) The theory of thematic relations in the mainstream Government and Binding literature, as well as its more recent offshoots, originates from Fillmore's (1968) Case Grammar, where arguments are admitted into the (deep) structure by virtue of their thematic roles. The traditional θ-criterion (Chomsky 1980) preserves this aspect of Fillmore's theory in the classical GB. By contrast, Gruber and Jackendoff treat categorial selection as a structure-

follows their line of research, and recognizes the split between categorial and thematic licensing. It assumes that CAUSE subcategorizes for a predicative complement, the VP (or a Case licensing projection that contains the VP), and specifies only the Agent and Patient roles. The Agent uniformly associates with the specifier of CAUSE,[7] but the Patient can associate with different constituents, which leads to the alternative readings discussed above.

Given that CAUSE is a two-place predicate that takes a VP complement, the causee must be generated inside the complement VP as its specifier. In the interactive reading, where *Alice made Don eat some cabbage* means Alice coerced or persuaded Don, it is the causee, *Don*, that is affected by the act of the causer, *Alice*. The association of the causee with the Patient role establishes an interaction between the causer and the causee. Patient association across a VP boundary is illustrated in the schematic D-structure representation in (10).[8] Note that this paper follows Stowell (1981) in assuming that thematic role association is a case of coindexation between the position of an argument and the corresponding slot in the thematic frame in the lexical representation of the predicate.

(10)

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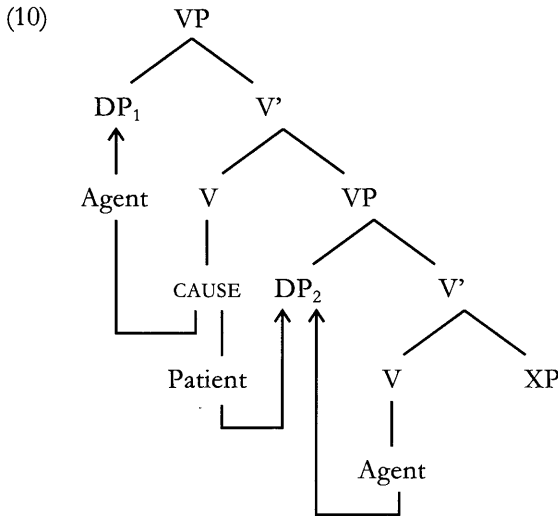
building operation that fulfills the formal requirements of heads, and they view thematic role association as an interpretive property of the predicate-argument structure.

(7) Strictly speaking, the role of the causer is far less active than an Agent is understood to be. It can be nonvolitional, as in *The rain made us stay home*, or completely inactive, as in *The view of the ocean made us stay home*. It is much closer to Rozwadowska's (1988) Neutral, although the term 'Agent' is used in this paper to avoid irrelevant side issues.

(8) I assume the three traditional levels of D-structure, S-structure, and LF established in Chomsky (1980). This approach is fully compatible with the bistratal or monostratal models of grammar since each level is a theoretic construct, a representation of the surface form (PF) through a set of well-defined syntactic procedures. Each representation is related to the surface form through the movement operation, which is ultimately an algorithm that links various positions in a tree. D-structure is the level at which each constituent appears in its subcategorized (base) position, S-structure is the surface form that is enriched with phonetically empty categories, and LF links constituents with various positions according to the logical relations in a clause. Consequently, all claims regarding the syntactic levels in this paper can be converted into the notation employed in Chomsky (1993, 1994) by interpreting any reference to 'the D-structure position' as 'the tail of a chain', and so forth.

To simplify the discussion, the complement of CAUSE is given as a VP in (10) instead of some larger constituent. XP stands for whatever complement the lower V may have, i.e., *some cabbage* in the current example, and the causee DP_2 is arbitrarily given as the Agent of the lower V. In this configuration, the causee acquires a composite role that combines Agent and Patient roles, thus capturing the dual nature of the causee in this reading as the argument that is acted on by the causer while simultanously performing the act denoted in the lower VP, e.g., the act of eating when the lower verb is *eat*.

Patient association across an XP boundary is not unique to interactive causation. Presumably, this procedure is used in the other cases of secondary predication (small clause structures) as well. This is most visible in the resultative construction.

(11)   a. Bill pounded the metal flat   b. Sue licked her plate clean

The objects in (11), *the metal* and *her plate*, are the Patient arguments of the main predicates *pound* and *lick*, and they are thematically linked to the secondary predicates, *flat* and *clean*.[9] Likewise, the specifiers of the AP and VP complements of perception verbs associate with the Neutral role across their small clause boundary instead of the Patient.[10]

(12)   a. I saw Bill angry   b. I heard Sue sing in the shower

In (12a), *Bill* is both the Neutral argument of the perception verb *see* and the Experiencer argument of *angry*, while *Sue* in (12b) is the Neutral of *hear* and the Agent of *sing*.[11]

Crucially, Patient association across the VP boundary in causatives must remain a local phenomenon. It should not extend to the XP complement of V in (10), or any other constituent lower than the causee DP_2. This is especially important in cases of iterated causatives that have three or more layers of VPs (for related discussion see Belvin this volume.)

(13) $[_{VP}\ DP_1\ CAUSE_1\ [_{VP}\ DP_2\ CAUSE_2\ [_{VP}\ DP_3\ V\ DP_4]]]$

Abstracting away from the Case licensing positions, (13) would be a rough representation of the VP embeddings of a sentence like *Alice made Bill make Don eat some cabbage* at D-structure. Without any locality requirement on Patient association, arguments inside the lowest VP in (13), DP_3 and DP_4, would be able to associate with the Patient of $CAUSE_1$, just as the XP complement of the lower V would with the Patient of CAUSE in (10). Thus, a relatively straightforward structure like (13) would yield numerous combinations of Patient association that are not attested. For example,

(9) The object does not associate with a role across the XP boundary in all instances of the resultative construction. Unergative verbs like *laugh* also take resultative objects, as in (i), but they do not provide any thematic role for them, just as they do not provide any role for their cognate objects, as seen in (ii).

(i)   We laughed Bill out of the room   (ii)   Sue laughed a hearty laugh

(10) Originally defined by Rozwadowska (1988), Neutral is the unaffected version of the traditional Patient role.

(11) It would be reasonable to speculate that the same procedure is operative in the serial verb construction and the Larsonian double-layered VP structures with three-place predicates like *give*. The latter case is presented and argued for in Kural (1996).

DP$_3$ would be able to associate with the Patient of CAUSE$_2$, and DP$_4$ with the Patient of CAUSE$_1$, which would be describing an event where Bill acts on Don, Alice acts on the cabbage, and Don eats some cabbage as a result, e.g., Bill forcing Don to eat the cabbage while Alice is cutting it up in little pieces. However, this is not an interpretation one can plausibly ascribe to *Alice made Bill make Don eat some cabbage.*

The kind of locality needed to block such unwanted readings is a familiar type of minimality condition reminiscent of Aoun's (1985) Generalized Binding, Rizzi's (1990) Relativized Minimality, and Chomsky's (1991) Economy Principles.

(14)   The Intervention Effect:
         An XP may not associate with a thematic role R provided by a predicate P
         if there is a YP such that P c-commands YP, and YP c-commands XP.

According to (14), an argument cannot associate with the Patient of CAUSE across another argument position, which means only the highest specifier position is accessible for this Patient role. Since it prevents the internal argument of a V from associating with the Patient of CAUSE, it also effectively eliminates Alsina's (1992) derivation for circumstantial causation, i.e., the reading of *Alice made Don eat some cabbage* in which Alice only creates the circumstances for Don's cabbage eating, perhaps by eating everything else in the refrigerator or by placing the cabbage in his favorite meal. The specifier *Don* intervenes between the object of the lower VP, *some cabbage*, and CAUSE. However, there is a much closer target for the Patient role that is not excluded by (14), and that is the root node of the entire complement VP. After all, it is the internal argument of CAUSE, and therefore, a natural candidate to associate with the Patient role. This VP contains all the relevant components of the caused event, i.e., the arguments and the predicate, so it encompasses the event as a whole, which is what is being affected in this reading. When a VP becomes the Patient of CAUSE, it is interpreted as the causer creating the caused event by manipulating the circumstances, without interacting with any participant of the caused event. The following is a schematized diagram of the D-Structure thematic relations under the circumstantial interpretation.

(15)
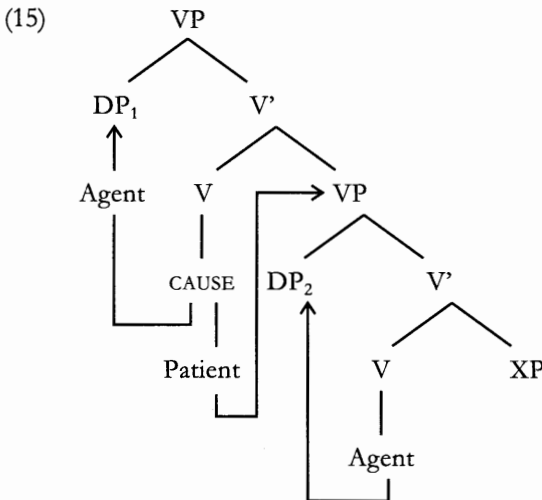
In *Alice made Don eat some cabbage*, the lower VP that associates with the Patient of CAUSE represents Don's cabbage-eating event. Subcategorization and thematic licensing converge in this reading, so CAUSE is correctly perceived as a two-place predicate.

The distribution of the Patient of CAUSE plays a key role in accounting for the facts mentioned in the beginning: (1) Unaccusative verbs like *arrive* do not allow the interactive reading in languages that have overt verb incorporation. It will be argued in section 3 that this is due to the position of the causee at the level that the verb incorporates into CAUSE. (2) Null causatives, which are used in transitivizing verbs like *run*, disallow the circumstantial reading. This will be derived in section 4 from the type of syntactic operation that produces a null causative, as opposed to an overt causative. Each account will rely on assumptions that are novel in some respects, but essentially well-motivated within the representational view of the syntax, or a more constrained version of the derivational view that discards rule reordering effects and adopts the guideline that syntactic principles cannot be satisfied between levels.

3. The Absence of Interactive Causation

3.1. The Phenomenon

Unaccusative verbs can be causativized in Turkish, but only with the circum-stantial causation reading, excluding interactive causation.

(16) a. Ahmet   Ayşe-yi   toplantı-ya   zaman-ı-nda   var-dır-dı
          A.-NOM   A.-ACC   meeting-DAT   time-3SG-LOC   arrive-CAUSE-PAST-3SG
          'Ahmet made Ayşe arrive on time for the meeting'
      b. *[Al-dı-ğ-ı   emir]   Ayşe-yi   toplantı-ya   zaman-ı-nda
          get-PAST-COMP-3SG   order-NOM   A.-ACC   meeting-DAT   time-3SG-LOC
          var-dır-dı
          arrive-CAUSE-PAST-3SG
          'The order she got made Ayşe arrive on time for the meeting'

(17) a. Ali   Ahmet-i   hastalan-dır-dı
          A.-NOM   A.-ACC   be.sick-CAUSE-PAST-3SG
          'Ali made Ahmet become sick'
      b. *Salmonella   Ahmet-i   hastalan-dır-dı
          salmonella-NOM   A.-ACC   be.sick-CAUSE-PAST-3SG
          'Salmonella made Ahmet become sick'

As mentioned earlier, Ahmet can make Ayşe arrive on time only by creating the right circumstances in (16a), such as giving her a ride or letting her leave early. Likewise, Ali can cause Ahmet to become sick by having him eat bad food in (17a).[12] The causative becomes ungrammatical if the causer is the type of thing that, in the speakers' understanding of the world, can work only by acting on the causee, such as the order that Ayşe receives in (16b), or the actual agent of the sickness, *salmonella* in (17b).

---

(12) I have trouble interpreting (17a) as Ali being infected with some contagious disease and passing it on to Ahmet. This should not be very surprising since it would be a form of the interactive reading in (17b). The subject initiates the sickness in both cases, in a way that is if not medically accurate, certainly a linguistically relevant conception of the world.

There are two factors that contribute to the absence of the interactive reading in (16) and (17): the unaccusativity of the causativized verb and the morphological nature of the causative. These elements can be isolated as follows. The interactive interpretation is available with an unergative verb in the lower VP.

(18) a. [Al-dı-ğ-ı   emir]   Ayşe-yi toplantı-ya
         get-PAST-COMP-3SG order-NOM A.-ACC meeting-DAT
         yönel-t-ti
         move-CAUSE-PAST-3SG
         'The order she got made Ayşe move towards the meeting'
      b. Salmonella   Ahmet-i kus-tur-du
         salmonella-NOM A.-ACC   vomit-CAUSE-PAST-3SG
         'Salmonella made Ahmet vomit'

The causers still operate by directly acting on the causee: the order forces Ayşe to move towards the meeting, and salmonella is the agent that causes Ahmet to vomit. The difference between these examples is that *var* 'arrive' and *hastalan* 'become sick' are unaccusative verbs,[13] while *yönel* 'move towards' and *kus* 'vomit' are not.[14]

The other factor is the morphological nature of the causative. Unlike the causative in (17b), a corresponding sentence in the light verb construction with *et* 'do/make' in (19) allows *salmonella* as an interactive causer.

(17) b. *Salmonella   Ahmet-i hastalan-dır-dı
         salmonella-NOM A.-ACC   be.sick-CAUSE-PAST-3SG
         'Salmonella made Ahmet become sick'

(19)   Salmonella   Ahmet-i hasta   et-ti
         salmonella-NOM A.-ACC   sick   do-PAST-3SG
         'Salmonella made Ahmet sick'

---

(13) Deadjectival verbs derived with *-lAn-* are always unaccusative, which sharply contrasts with those that are derived with *-lAş-*.

   (i) Ekleme kumaş   pantolon-u bol-laş-tır-dı/* bol-lan-dır-dı
        additional fabric pants-ACC loose-LAŞ-CAUSE-PAST-3SG/loose-LAN-CAUSE-PAST-3SG
        'The additional fabric made the pants loose'
   (ii) Çamaşır suyu çarşaflar-ı beyaz-laş-tır-dı/* beyaz-lan-dır-dı
        bleach   sheets-ACC white-LAŞ-CAUSE-PAST-3SG/white-LAN-CAUSE-PAST-3SG
        'The bleach made the sheets white'

The causative forms *bollandır* and *beyazlandır* are alright with a human subject, which would not be acting directly on the pants or the sheets.

(14) The most reliable test for unaccusativity in Turkish is whether the verb allows specific event reference when passivized. Unaccusative passives have the generic interpretation, which is only optional with the passives of unergatives and transitives (Baker, Johnson, and Roberts 1989; Özkaragöz 1986; Sezer 1991). The passives of *var* 'arrive' and *hastalan* 'become sick' cannot describe a specific event, but the passives of *yönel* 'turn towards' and *kus* 'vomit' can.

   (i) Şu   an-da   toplantı-ya yönel-in-iyor/*var-ıl-ıyor
        that moment-LOC   meeting-DAT move-PASS-PRES-3SG/arrive-PASS-PRES-3SG
        'At the moment, one is/people are moving towards/arriving at the meeting'
   (ii) Şu   an-da   doğ-u-da   kus-ul-uyor/*hastalan-ıl-ıyor
        that moment-LOC   east-LOC   vomit-PASS-PRES-3SG/be.sick-PASS-PRES-3SG
        'At the moment, people are vomiting/becoming sick in the east'

The passive morpheme is an *-(I)n-* after vowels and the liquid /l/, and an *-(I)l-* elsewhere.

The range of readings allowed in the light verb construction in Turkish is the same as what is observed in the periphrastic causatives of English and Greek.

(20) English:
    a. Sue made Bill arrive on time for the meeting
    b. The magician made the rabbit appear on stage

(21) Greek:
    a. [I apili   tou   Nikou]   mekane   na
         the threat the-GEN Nikos-GEN 1SG.ACC.CL-made-3SG SUBJ
         ftaso   stin   ora   mou
         arrive-1SG-SUBJ at-the time   1SG.GEN.CL
         'Nikos' threat made me arrive on time'
    b. O   maghos ekane   na emfanisti   to kouneli sti   skini
         the magician made-3SG SUB appear-3SG-SUBJ the rabbit at-the stage
         'The magician made the rabbit appear on stage'

Morphological affixation is absent in both the Turkish light verb construction and the periphrastic causatives of English and Greek, where the verb incorporation is delayed until LF.[15] The generalization that emerges here is the following.

(22) The Restriction on Interactive Causation:
    The causative of an unaccusative verb V does not allow the interactive causation reading if V is incorporated into CAUSE at S-structure.

It will be argued below that this restriction follows from the interaction between the syntactic levels of verb movement and thematic role association.

3.2. The Account

The defining characteristic of unaccusative verbs is that their surface subjects start out as internal arguments (Perlmutter 1978, Burzio 1986). The D-structure illustrated in (23) shows the basic architecture of a VP headed by an unaccusative verb, *arrive*, embedded under CAUSE (see also Davis this volume). It is a schematized representation that leaves out potential Case licensing positions between VPs.

The interactive reading requires the Patient of CAUSE to associate with the causee DP_2, generated as the complement of the lower V in (23). The Intervention Effect in (14) qualifies the specifier of the unaccusative VP as an intervener with respect to its internal argument.[16] As a result, the DP2 in (23) is not accessible for the Patient

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(15) It is assumed in this work that verb incorporation into CAUSE is motivated by the need to create a complex predicate that corresponds to the complex event that is being described. This procedure is also required by the widely accepted view that LF representations are constant across languages.

(16) The status of the vacant specifiers is a complicated issue that cannot be resolved within the confines of this paper. There are various proposals in the literature, most recently by Kayne (1994) and Chomsky (1994), that produce the specifier position only by attaching a constituent to an X', which naturally disallows vacant specifiers. However, none of these theories ban syntactic placeholders from producing the specifier position before being replaced by some other constituent after movement. This is, in fact, more or less the way expletives function at the nominative Case position. From this perspective, the vacant specifier in (23) may well be such a semantically

of CAUSE, which means the interactive causation reading can never be established at D-structure, i.e., the tail ends of chains, with an unaccusative verb in any language.

(23)
```
              VP
          ┌────┴────┐
        DP₁        V'
                ┌───┴───┐
                V       VP
                │    ┌───┴───┐
              CAUSE  e      V'
                          ┌──┴──┐
                          V    DP₂
                          │
                        arrive
```
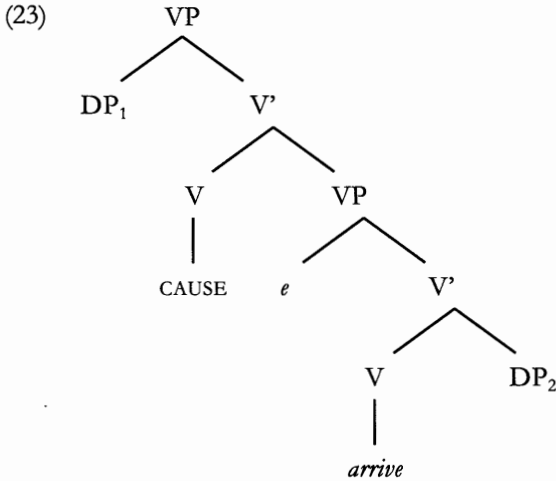
The internal argument of an unaccusative verb becomes accessible for the Patient role of CAUSE at S-structure by moving up to or passing through the specifier of the complement VP. The result is schematically represented in (24). Note that CAUSE, DP_1, and DP_2 may have moved to some higher positions at this level, in which case the corresponding constituents in (24) would be traces or copies.

(24)
```
              VP
          ┌────┴────┐
        DP₁        V'
                ┌───┴───┐
                V       VP
                │    ┌───┴───┐
              CAUSE DP₂     V'
                          ┌──┴──┐
                          V    DP₂
                          │     │
                        arrive  t₂
```

___
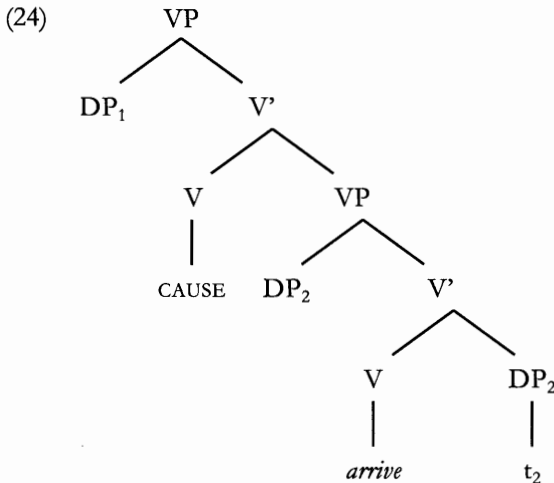
empty placeholder that is later replaced by DP_2 during the derivation. Alternatively, the Intervention Effect in (14) can be reformulated in a way that makes reference to a closer governor or intervening head in the spirit of Chomsky (1986) rather than an intervening specifier.

Once DP_2 is raised to the highest specifier inside the complement of VP, it becomes viable for the Patient of CAUSE. This is essentially the procedure that licenses the interactive reading with unaccusative verbs in languages like English and Greek. Crucially however, Patient association at S-structure must be blocked in languages like Turkish and Hungarian, where the morphological causatives disallow the interactive reading. What separates languages of this type from those like English and Greek is the surface position of the causativized lower verb. The S-structure of morphological causatives is schematized in (25), where the lower verb has incorporated into CAUSE. As in (24), the constituents *arrive*-CAUSE, DP_1, and DP_2 may have moved further up at this level, leaving behind traces or copies in (25).

(25)

```
                      VP
                     /  \
                  DP₁    V'
                        /  \
                      Vᵢ    VP
                     /  \   /  \
                   Vⱼ  Vᵢ DP₂  V'
                   |    |      /  \
                 arrive CAUSE Vⱼ  DP₂
                             |     |
                             tⱼ    t₂
```
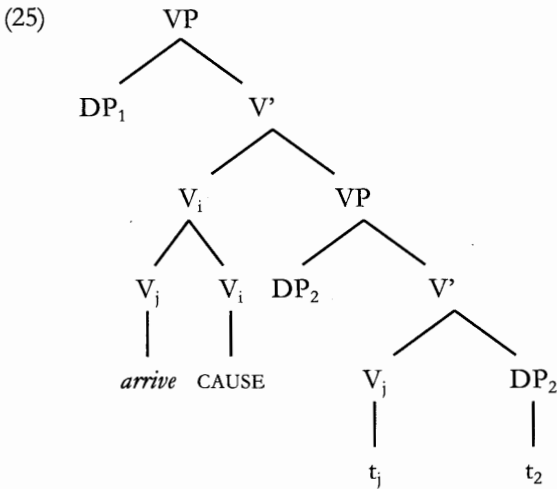
Since verb incorporation is the only substantial diference between these two structures, it seems plausible to suggest that DP_2, or its trace or its copy, fails to associate with the Patient of CAUSE in (25) precisely because *arrive* has adjoined to CAUSE. Intuitively, this is due to a general constraint on thematic role association, according to which an argument can only associate with the role of a simplex predicate. That is, it can receive the appropriate thematic index from a predicate as long as it is not a part of a complex predicate. Once *arrive* adjoins to CAUSE, the result is *arrive*-CAUSE, which is neither *arrive* nor CAUSE. This constraint is stated below as an opacity condition.

(26) Opacity of Role Association:
      For a predicate P, argument A, and thematic relation R, A bears the relation R with respect to P iff A bears the relation R with some subpart of P.

As mentioned for *arrive*-CAUSE, the verbal complex V-CAUSE is composed of the parts V and CAUSE, and it is neither V nor CAUSE. According to the Opacity Condition, an argument bears the Patient-of-CAUSE relation with the complex predicate V-CAUSE only if it already bears the Patient-of-CAUSE relation with CAUSE. In other words, it may not become the Patient of CAUSE at a level where CAUSE

becomes part of the complex predicate V-CAUSE. As a result, an argument must associate with the Patient of CAUSE at a level before V incorporates into CAUSE.[17]

Verb incorporation takes place at S-structure in morphological causatives, so Patient association must be complete at D-structure. At this level, however, the sole argument of the unaccusative verb is too low to become the Patient of CAUSE across the intervening specifier, which leaves the VP as the only viable candidate for the Patient role, and circumstantial causation as the only possible reading. This contrasts with periphrastic structures, where the verb incorporation that produces a unified complex event is delayed until LF, leaving S-structure as a viable level for the causee to associate with the Patient of CAUSE. As a result, although D-structure universally fails to establish the thematic relations that yield interactive causation with unaccusative verbs, periphrastic causatives can tap into the option of Patient association at S-structure to produce this reading.[18]

Finally, note that no major point has been compromised by the simplified view of the periphrastic structures of English, where all intermediate projections between VPs are omitted. As mentioned earlier, the ability of causatives to duplicate the accusative Case indicates that CAUSE selects a larger constituent that contains the accusative licensor AgroP in English.

(8)   Bill made *them* make *him* make *us* eat some cabbage

Thus, a more accurate representation would have an AgroP lying between each VP layer.

(27)
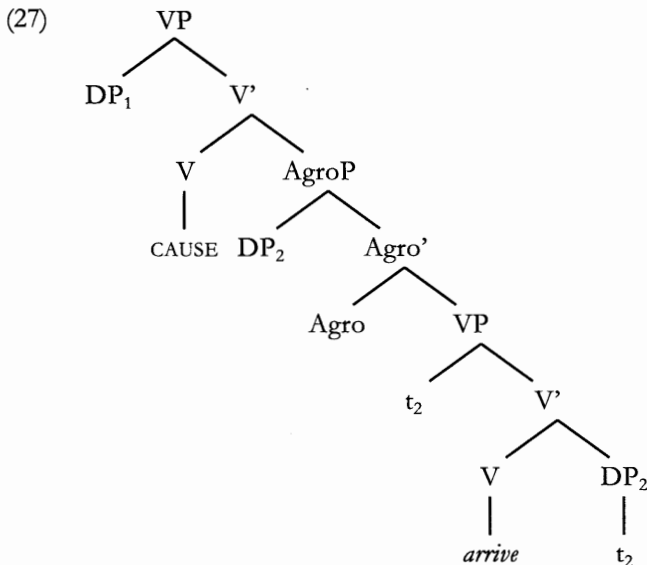
(17) Under a loose version of the derivational view, one can move DP_2 first, associate it with the Patient of CAUSE, and then move the lower V. For this reason, the account proposed here requires syntactic principles (or features) to be checked only at the relevant levels, disregarding all intermediate stages. This is provided by both the representational view and a highly constrained version of the derivational view.

(18) Word formation is clearly a factor in the complex predicate formation. Whether or not this paradigm can be reduced entirely to word formation remains to be seen.

The fronting of the DP$_2$ in (27) is evident in the word order of *Sue made Bill arrive (on time)*, where *Bill* precedes *arrive* even though it is generated as its internal argument. The determination of whether this argument moves to [Spec, VP] or to [Spec, AgroP] requires data that is more elaborate than what is being considered here. Nevertheless, it might be reasonably conjectured that the DP$_2$ in (27) moves to [Spec, AgroP] in these structures, where it can successfully associate with the Patient of CAUSE.[19] As a general rule, the interactive reading becomes available in periphrastic structures when the DP$_2$ reaches the highest specifier inside the complement of CAUSE at S-structure.

3.3. An Apparent Exception

It was explicitly claimed above that morphological causatives of unaccusative verbs should not yield the interactive reading in any language. At first, Japanese and Korean appear as counterexamples to this generalization, since it is possible to interpret the following as describing interactive causation between the causers and the causees.

(28) Korean:
      Mapepsa-ka   thaokki-lul mutay-ey nathana-key   hay-ess-ta
      magician-NOM   rabbit-ACC   stage-LOC appear-CAUSE   do-PAST-INDIC
      'The magician made the rabbit appear on stage'

(29) Japanese:
      Taroo ga   Hanako o   zikan-doori-ni tuk-ase-ta
      T.   NOM H.   ACC   on.time   arrive-CAUSE-PAST
      'Taro made Hanako arrive on time'

Unlike the comparable Turkish and Hungarian sentences given in (1) and (2), the magician can directly act on the rabbit to make it appear on stage in the Korean (28), and Taro could be forcing Hanako to arrive on time in the Japanese (29).

However, this is not a genuine discrepancy. There is a substantial difference between the properties of the causative morphology in Turkish and Hungarian on the one hand, and Korean and Japanese on the other. The ability of the causative morpheme to duplicate is quite robust in Turkish, and it is also possible to an extent in Hungarian, whereas Korean and Japanese do not allow any such duplication. They allow only a single morpheme to be overt even when the situation that is described in the clause requires multiple layers of causative VPs. Therefore, a clause with a single causative morpheme is always ambiguous in these languages with respect to the number of causative layers it has.

---

(19) Taking this position one step further, it seems equally plausible that objects uniformly move to [Spec, AgroP] at S-structure in English. This would explain why shifted indirect objects occur in the same position (immediately postverbal) as direct objects.

    (i) Bill gave Mary a present   (ii) Bill gave a present to Mary

This would suggest that the verb moves to a position higher than the AgroP, though it remains lower than the TP, as suggested by facts regarding VP-deletion and *do*-support.

(30) Korean:
      Bill-i   Mary-lul   talli-key   hay-ess-ta
      B.-NOM   M.-ACC   run-CAUSE   do-PAST-INDIC
      'Bill made Mary run'

(31) Japanese:
      Hanako   ga   Taroo   o   hasir-ase-ta
      H.   NOM T.   ACC   run-CAUSE-PAST
      'Hanako made Taro run'

The immediate reading of (30) and (31) involves only two inividuals, the causer and the runner. However, these sentences may also describe situations with three individuals where the causer acts on some unnamed third party, say Sue or Ziro, that forces Mary and Taro to run. This particular interpretation is not possible in Turkish as long as the clause has a single causative morpheme. For example, the causation in (32a) below can involve only two participants, the causer and the runner. A third individual is involved only if there is a second causative morpheme, as in (32b).[20]

(32) a. Ahmet   Ali-yi   koş-tur-du
          A.-NOM   A.-ACC   run-CAUSE-PAST-3SG
          'Ahmet made Ali run'
      b. Ahmet   Ali-yi   koş-tur-t-tu
          A.-NOM   A.-ACC   run-CAUSE-CAUSE-PAST-3SG
          'Ahmet made someone make Ali run'

The causative layers are quite transparent in Turkish due to the ability of the alternating morphemes -DIr- and -t- to iterate. Likewise, Hungarian can combine *fut* 'run' with the causative morphemes to produce *futtat* 'run-CAUSE' and *futtattat* 'run-CAUSE-CAUSE', though the phonological repetition after the second -*tat*- starts degrading the sentences.

The ability of the causative morpheme to duplicate is significant in this discussion because of an interesting effect it has in Turkish. The interactive reading becomes possible with unaccusative verbs when the causative morpheme is doubled.

(33) a. [Al-dı-ğ-ı   emir]   Ayşe-yi   toplantı-ya   zaman-ı-nda
          get-PAST-COMP-3SG   order-NOM   A.-ACC   meeting-DAT   time-3SG-LOC
          var-dır-t-tı
          arrive-CAUSE-CAUSE-PAST-3SG
          'The order she got made Ayşe arrive on time for the meeting'
      b. Salmonella   Ahmet-i   hastalan-dır-t-tı
          salmonella-NOM   A.-ACC   be.sick-CAUSE-CAUSE-PAST-3SG
          'Salmonella made Ahmet become sick'

---

(20) The strict correlation between the causation event and the causative morpheme fails only when the act of the intermediary participant is completely predictable. If I wanted my supervisor to sign some form, I could hand it to the secretary and describe the situation with a single causative morpheme on *imzala* 'sign' (*imzala-t*) because the secretary's act of passing the forms along to the supervisor would be deemed automatic. It is very likely that the secretary is conceptualized as an extension of the supervisor in such situations (see the discussion on instrument phrases in Kural 1996).

This is the only instance in Turkish where a causative layer does not overtly or covertly increase the number of participants in an event. It would, therefore, be consistent with the characteristics of Turkish causatives to posit an additional argument in these cases, albeit a covert one that does not introduce a new referent, i.e., a PRO. It would also be reasonable to assume that the unaccusative nature of the lower VP is not altered by adding a second layer of causative VP. Therefore, the argument that can freely associate with the Patient of CAUSE for the interactive reading must be generated as the specifier of the intermediate VP, i.e., the lower CAUSE in (34). Because of the way PRO-control operates, the overt internal argument must be generated as the specifier of the intermediate VP, headed by the lower CAUSE, and the sole argument of the unaccusative verb must be the PRO that it controls. The structure of vacuous causatives in Turkish is schematically represented in (34) below.

(34)

```
               VP
              /  \
          DP₁     V'
                 /  \
                V    VP
                |   /  \
             CAUSE DP₂  V'
                       /  \
                      V    VP
                      |   /  \
                   CAUSE e   V'
                            /  \
                           V    PRO
                           |
                         arrive
```
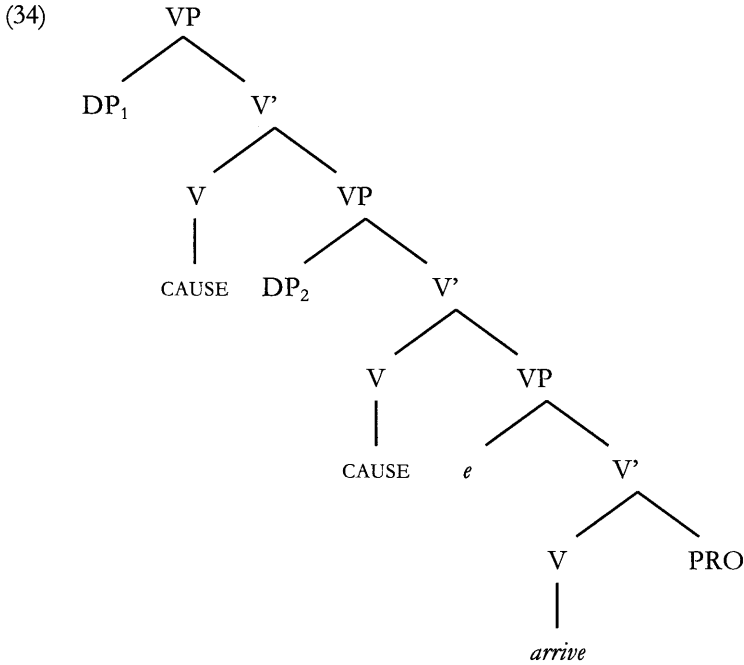
DP_2 is generated high enough to associate with the Patient of the higher CAUSE, and the PRO argument of the unaccusative verb is controlled by the DP_2.

The exact nature of the vacuous causatives is unclear at present. However, they provide a frame in which the interactive causation reading may obtain with unaccusative verbs in Korean and Japanese. The causative morpheme cannot be duplicated in these languages, so (30) and (31) are structurally ambiguous in terms of the number of causative layers they have. As long as the mechanism responsible for the interactive reading in the vacuous causatives of Turkish is also at work in the concealed causatives of Korean and Japanese, (30) and (31) would not be

violating the generalization made above.[21] For reasons that will be apparent in the following section, this reading is derived from structures where the lower CAUSE is the overt morpheme that introduces the overt causee, and the higher CAUSE is the phonetically null form that introduces the Agent.

4. The Absence of Circumstantial Causation

4.1. The Phenomenon

Recall that in the circumstantial reading of causative clauses like *Alice made Don eat some cabbage*, the causer, *Alice*, does not act on the causee, *Don*. Instead, she brings about the caused event by manipulating the circumstances of the participants introduced in the lower VP, i.e., *Don* and *some cabbage*. For example, Alice may place the cabbage in Don's favorite meal or leave newspaper articles around the house that discuss how eating cabbage prevents hair loss. This reading arises when the Patient role of CAUSE associates with its predicative complement, a VP or a Case licensing projection that contains the relevant VP. It essentially obtains under the traditional head-complement relationship, so it is not surprising that it is sensitive to the morphological properties of the head, i.e., CAUSE.

The circumstantial reading is notably missing in the transitivized versions of the verbs of motion in English, such as *run, march, walk,* and *jump*.[22]

(35) a. The horses ran around the field
      b. The tigers jumped through the hoop
      c. The soldiers marched towards the stadium

(36) a. The clown ran the horses around the field
      b. The lion tamer jumped the tigers through the hoop
      c. The commander marched the soldiers towards the stadium

The transitivized sentences in (36) do not have the same range of readings as the periphrastic causatives in (37) or the Turkish morphological causatives in (38) below.

(37) a. The clown made the horses run around the rink
      b. The lion tamer made the tigers jump through the hoop
      c. The commander made the soldiers march towards the stadium

(38) a. Palyaço atlar-ı   saha-nın   çevre-si-nde
         clown horses-ACC field-GEN circumference-3SG-LOC
         koş-tur-du
         run-CAUSE-PAST-3SG
         'The clown made the horses run around the field'

---

(21) An anonymous reviewer points out that this predicts (29) should mean something like *Taro forced Hanako to cause the circumstances to be such that she arrived on time* rather than *Taro forced Hanako to arrive on time*. The point is well-taken, though the difference may be too subtle to judge with any certainty, which is true for the Turkish equivalent in (33a), since the former reading entails the latter, as in the case of *Hanako arranged her circumstances such that she arrived on time* entailing *Hanako arrived on time*.

(22) Whatever I say about verbs of motion in this paper also holds for verbs like *freeze, close, sink,* and *break* that display a similar transitivity alternation. Those verbs are not discussed here in order to avoid other unrelated issues regarding their VP architecture.

    b. Aslan terbiyecisi kaplanlar-ı çember-den atla-t-tı
        lion   tamer   tigers-ACC hoop-ABL   jump-CAUSE-PAST-3SG
        'The lion tamer made the tigers jump through the hoop'
    c. Komutan   askerler-i   stad-a   doğru yürü-t-tü
        commander soldiers-ACC stadium-DAT towards walk-CAUSE-PAST-3SG
        'The commander made the soldiers march towards the stadium'

The interactive reading, with the causer forcing the causee, is readily available in all the sentences in (35) through (38). However, only the English periphrastic structures of (37) and the Turkish morphological causatives of (38) allow the circumstantial reading where the causer simply sets up the circumstances and lets the events run their natural course. For example, the clown may make the horses run around the field by starting a fire in their corral, the lion tamer may make the tigers jump through the hoop by placing their meal on the other side, or the commander may make the soldiers march towards the stadium by just telling them that marching is optional, but then promising an early furlough for those who march. The transitivized versions of *run, jump,* and *march* in (36) above do not allow these readings. In fact, they are typically interpreted as *the clown, the lion tamer,* and *the commander* actively forcing *the horses, the tigers,* and *the soldiers* to *run, jump,* and *march.* This generalization can be stated as follows.

(39)   The Restriction on Circumstantial Causation:
        Null causatives do not allow the circumstantial causation reading.

A plausible account for this restriction requires a detailed analysis of null causatives.

The increase in the valency of motion verbs follows the causative pattern in which the subject of the monadic *run* corresponds to the object of the diadic *run.* Assuming CAUSE is the only predicate that can increase the valency of a verb, and especially in this manner, it can be concluded that the diadic *run* in (36a) is derived by combining the monadic *run* with CAUSE. The combination produces a single word, parallel to the morphological causatives of Turkish in (38), and unlike the isolated verbs of the periphrastic structures in (37). Even though they are similar in their morphological complexity, the transitive *run* differs greatly from the Turkish *koştur* 'make run' in terms of its morphological composition. The causative form *koştur* is phonologically distinct from the base form *koş* 'run', but the phonetic content of transitive *run* is identical to its base form, the intransitive *run.* These two types are distinguished in this paper by using the term 'segmental causatives' for the Turkish type, e.g., *koştur* and *koş,* and 'null causatives' for the English type, e.g., *run* and *run.*

The circumstantial reading is available in the periphrastic and segmental causatives of (37) and (38), and blocked in the null causatives of (36). Clearly, these structures are differentiated by the phonological content of CAUSE, and the phonological properties of CAUSE is a determining factor in the thematic relations in a clause. It will be argued below that this connection is indirect, and that it is mediated by morphology and head movement: The phonologically null character of the causative indicates a particular morphological bracketing of the V-CAUSE complex, which is produced by the substitution type of head movement. The sub-

stitution operation, in turn, places restrictions on what can associate with the Patient of CAUSE, and excludes VP from the list of possible candidates.

4.2. The Account

In the absence of any phonological evidence, the increase in the valency is the only clue for the language learner to conclude that the transitive *run* is a complex predicate that is composed of the intransitive *run* and CAUSE. Otherwise, no phonological marking distinguishes it from ordinary transitive verbs like *hit* and *kiss*, which lack the semantics of causativized verbs. One could plausibly argue that the semantic evidence for the presence of CAUSE clashes in the learner's perception with the lack of any phonological evidence, and this conflict is resolved by positing a type of morphology that accommodates for both facts. This morphology would have to maintain a complex internal structure for the transitivized *run*, while combining the predicates in a way that makes them appear as a single unit externally. Suppose that this is done by having CAUSE and *run* form a union that is not separated by any bracketing, and merging them as [*run* CAUSE]. By contrast, the conventional bracketing [[*run*] CAUSE] is reserved for cases of overt causative morphology, where CAUSE and *run* can be identified as segments that are distinct, but not necessarily agglutinating. The language learner makes the choice between [*run*-CAUSE] and [[*run*] CAUSE] on the basis of phonological evidence. The nonsegmental [*run*-CAUSE] is posited in cases of null causatives, like the transitivized *run*, and [[*run*] CAUSE] is posited when CAUSE has overt phonetic content, as in the Turkish *koştur* 'make run'.

Assuming that morphological affixation must always have a corresponding head-movement in the syntax,[23] the syntactic correlate for the nonsegmental bracketing [*run*-CAUSE] would be the nonbranching attachment of *run* to CAUSE, and for the segmental bracketing [[*run*] CAUSE], it would be the branching type. Nonbranching structures are produced in the syntax by substitution, and branching structures, by adjunction. In terms of head movement, substitution and adjunction create the following structures.

(40) a. Substitution: V   b. Adjunction: V

                               | ╱╲
                                                                       ╱   ╲
                          [CAUSE *run*]   V   V

                                                                     | |

                                                                   run   CAUSE
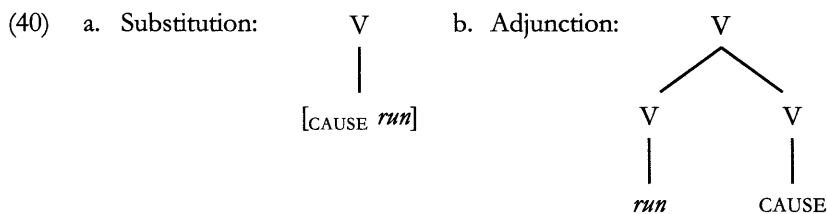
The merged predicates form a single unified head under V in the nonbranching structure created by substitution. The terminal node of V is CAUSE at D-structure, but after the substitution, the intransitive *run* replaces CAUSE and becomes the terminal node of V at S-structure. The procedure of replacement presumably eliminates the phonetic content of CAUSE, whose lexico-semantic properties remain on the V node,

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(23) Regardless of whether heads pick up morphology during movement or simply check off features, there would still be a one-to-one correlation between syntax and morphology.

and transitivizes *run*. Crucially, V adopts the identity of *run* at S-structure, which by that point has become its terminal node. By contrast, the branching structure in (40b) has a more conventional interpretation. The lower V, *run*, is adjoined to CAUSE to form a multilevel head complex where each V remains a distinct node. The original terminal node of the higher V remains intact in this configuration, so the index of CAUSE is presented in this structure.

Indexation is a practical way for keeping track of the identity of constituents that have moved in the syntax. The convention in (41) below preserves the identity between heads and terminal nodes. It is not intended as a primitive of the theory, but as a corollary of the basic tenets of the X'-theory and lexical insertion (Chomsky 1970, 1980, 1994).

(41)   The Indexation Convention I:
        A head must bear the same index as its terminal node.

The main function of (41) in this context is to force the host V to adopt the index of the substituted V in the nonbranching structures.
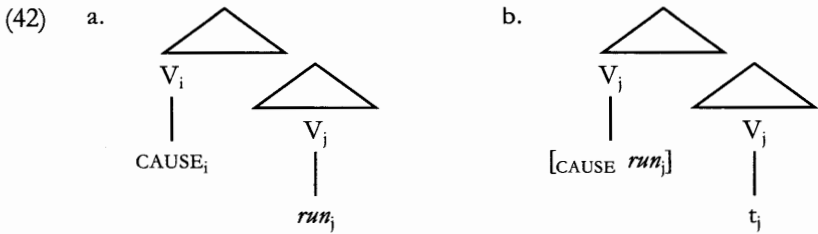
Once the lower verb *run* replaces the terminal node CAUSE, the V of CAUSE acquires the characteristics of *run*, while retaining those of CAUSE. In the circumstantial reading, the Patient of CAUSE associates with its complement VP, projected from the intransitive *run*.3
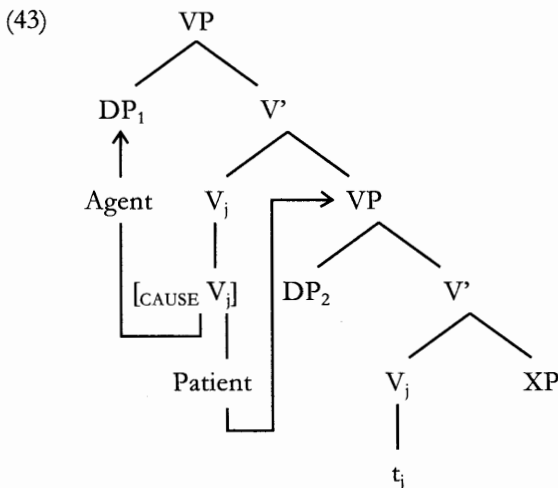
A basic axiom of the X'-theory is that all bar levels projected from an X-head are identical to X in every respect except for the bar level.[24] This is what enables the use of the X'-theory as a schema that merely provides the format in which lexical and functional elements appear in the structure, without contributing anything substantial. Assuming that indexation is an appropriate way to encode identity, the uniformity between the X-head and the X'-projections would be captured by making it compulsory for XPs to bear the same index as their heads, which actually follows from the fundamentals of the X'-theory.

(44)   The Indexation Convention II:
        All bar level projections of a head X must bear the same index as X.

This convention dictates that the lower VP in (43) must have the same index 'j' as its head, V_j, i.e., a VP_j. When V_j substitutes for CAUSE to form $[_{CAUSE} \, run]$, the V_i of CAUSE adopts the index 'j' because of the Indexation Convention I in (41), and eventually passes it along the bar levels up to its VP by the Indexation Convention II to convert it to a VP_j. This series of reindexation leads to an S-structure configuration where the predicate V_j, i.e., $[_{CAUSE} \, run_j]_j$ takes its own maximal projection, the lower VP_j as its thematic (Patient) argument, which is a circularity that should be enough to rule out the circumstantial reading in null causatives.[25]

There is no such circularity problem when the specifier of the lower V, the causee, associates with the Patient of CAUSE for the interactive reading, because the index of the argument in the specifier position does not percolate up to the VP node.

(45)

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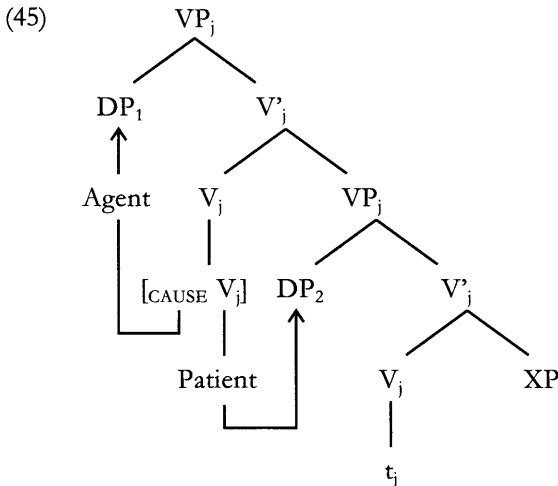
(24) Clearly the difference between an XP and an X is not trivial. XPs contain specifiers and complements, as well as heads, they have very different distribution, and they form distinct chains. Although the bar levels make XP a different object than an X, my claim is that they have the same identity as their head Xs.

(25) This restriction is comparable to the principle invoked by Stowell (1991), which states that a constituent cannot be an argument and a predicate simultaneously.

The lower VP has the index 'j', and the higher V is reindexed as a V_j after the lower V run_j substitutes for it. However, the argument that associates with the Patient of the CAUSE is the specifier of the complement VP_j instead of the VP_j itself. As a result, the interactive reading is allowed in null causatives.

The situation is altogether different when the lower verb adjoins to the higher verb. The branching structure resulting from head adjunction preserves the distinctiveness of the heads and the terminal nodes. After adjunction, CAUSE remains as the terminal node of the lower segment of the higher V and *run* as the terminal node of the moved V. The upper segment of the host V dominates both terminal nodes *run* and CAUSE, and it is forced by the Indexation Convention I to acquire both the indices 'i' and 'j'.

(46)   a.

    b.
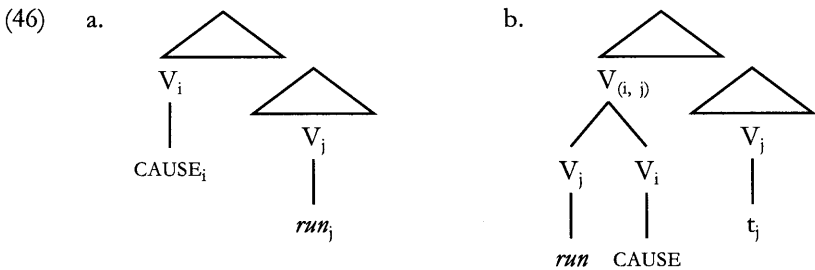
The branching structure keeps the indices distinct, so the adjunction operation does not create the environment of thematic circularity when the complement VP associates with the Patient of CAUSE. This holds for all types of causatives where CAUSE has phonetic content, and its parts CAUSE and V are bracketed separately in the form of segmental morphology, corresponding to the branching structure derived by head adjunction.

5. Conclusion

The paradigm cases discussed in this paper have plausible and straightforward accounts under the basic assumption that the Patient of CAUSE can associate with either its complement VP or the specifier of that VP. These options are available because of the separation between subcategorization and thematic licensing, which is consistent with Gruber's (1965) and Jackendoff's (1972, 1990) theories that treat thematic relations as interpretive phenomena that do not by themselves generate structures.

Perhaps the most significant consequence of the analysis presented in this paper is that it forbids unaccusative verbs from participating in the type of transitivity alternation observed with motion verbs like *run* and *march*. The Restriction on Interactive Causation in (22) bars the Patient of CAUSE from associating with the unaccusative argument, and the Restriction on Circumstantial Causation in (39) bars it from associating with the VP complement in null causatives. Together, these two restrictions ensure that the Patient of CAUSE has no argument to associate with

when an unaccusative verb participates in the null causative construction. This conclusion is supported by the following.

    (47)   a. *The police appeared the defendant before the court
                 'The police made the defendant appear before the court'
          b. *The air traffic controller occurred an accident at the LAX
                 'The air traffic controller made an accident occur at the LAX'
          c. *God existed fossils of sea animals in the Himalayas
                 'God made fossils of sea animals exist in the Himalayas'
          d. *Bill arrived the messanger with good news
                 'Bill made the messanger arrive with good news'

However, there are quite a few verbs that are traditionally classified as unaccusative, such as *sink, melt, break* and *burn*, that display the transitivity alternation brought about by incorporation into null CAUSE.

    (48)   a. The ship sank in the harbor
          b. The ice melted in the bay
          c. The window broke into pieces
          d. The house burned during the riots

    (49)   a. The enemy sank the ship in the harbor
          b. The volcano melted the ice in the bay
          c. The kids broke the window into pieces
          d. The angry mob burned the house during the riots

Like the transitivized motion verbs of the *run* variety, the transitivized verbs in (49) allow only the interactive reading.

The availability of null causatives in (49) is significant because it makes a very specific claim about the VP architecture of inchoative verbs like the intransitive *sink*. Null causatives are formed at S-structure, so their sole arguments must be high enough at D-structure to associate with the Patient of CAUSE. This association can take place only at the topmost specifier of the VP complement of CAUSE, which is clearly not the unaccusative structure defined in Burzio (1986), and displayed by *arrive* and *appear.*

Thus, this paper concludes not by neatly tying up all the loose ends, but by calling aspects of the traditional verb typology into question. Intransitive verbs of the *sink, burn,* and *break* type act like unaccusatives in many respects (auxiliary selection, passivization, etc.), but the evidence from causatives suggests that their arguments are generated as specifiers. Evidently, the classic dichotomy between unaccusatives and unergatives is not fine grained enough to establish these verbs as an intermediate category, although they seem to be sharing properties with both classes.[26] This and

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(26) Based on evidence regarding null causatives and passivizability, Kural (1996) argues for a four-way classification instead of the traditional two-way distinction that recognizes only the unaccusative and unergative verbs.

other consequences of the analyses presented in this paper raise complex questions that are best addressed in a separate work.

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PARAMETRIC VARIATION IN DETERMINER SYSTEMS: SALISH VS. ENGLISH[1]

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1. Introduction

Salish languages differ from English in apparently fundamental respects; they are morphologically rich, allow null arguments, and show relatively free word order. The deep typological split between Salish and English gives rise to a parametric problem: manifold dissimilarities must be reducible to a learnable number of parameter settings. The question also arises of whether syntactic properties of Salish which differentiate it from English should be directly linked to morphological properties, such as the head-marking nature of Salish languages.[2]

This paper addresses one aspect of the parametric problem raised by Salish. It provides a detailed examination of determiner systems in Salish languages, and argues that there are fundamental differences between determiners in Salish and in English-type languages. These include the absence in Salish of definiteness marking and of quantificational determiners, and the overt encoding of the presence or otherwise of existential force. I argue that Salish determiner systems can be accounted for by means of the parameter in (1).

(1)   *Common Ground Parameter*
        Determiners may access the common ground of the discourse:

        Yes: { English, ... }   No: { Salish, ... }

(2) For an approach which derives syntactic properties from morphological properties, see Baker (1996) on Mohawk.

With a small extension, the Common Ground Parameter can also account for features of Salish deictic systems and the nature of a set of sentence-level clitics. While the Common Ground Parameter has syntactic and semantic effects, it is statable at the level of the lexicon, in line with proposals that restrict parametric variation to lexically defined properties (e.g. Borer 1983, Chomsky 1993).

The analysis presented here differs from accounts of the Salish-English split along the lines of Jelinek (1995) and Baker (1996). Jelinek and Baker propose single over-arching 'macro-parameters' which produce fundamental typological splits between languages. The Common Ground Parameter is not a macro-parameter; it is not intended to account singlehandedly for all differences between Salish and English. However, the Common Ground Parameter achieves maximal empirical coverage within its domain; wider-ranging parameters fail to account for the complex range of facts evidenced by Salish determiner systems.

Based on the evidence presented in this paper, I will suggest that the semantic-syntactic features of Salish determiners should not be tied to morphological properties of Salish. This predicts that a negative setting of the Common Ground Parameter is possible in languages whose morphology differs from that of Salish; this prediction is argued to be upheld.

A note is in order regarding the extent of the current study. The Salish family contains approximately 20 extant languages. Data presented here come from a subset of 10 of those languages, with representation from all major subgroups except the Southern Interior Branch.

2. Proposals about Salish determiner systems

In this section, I argue for the following three proposals about Salish determiners (see also Matthewson 1996):

(2)   a. Salish determiners do not encode definiteness.
      b. Salish determiners do not encode specificity.
      c. There are no quantificational determiners in Salish (see also Jelinek 1995).

Salish determiners differ from English determiners with respect to (2a) and (2c). Let us examine the three proposals one by one.

2.1. Salish determiners do not encode definiteness

Following Heim (1982) and others, I take the major distinction between definite and indefinite determiners to be a familiar-novel distinction. Definites are familiar to the common ground of the discourse, while indefinites are novel to the common ground of the discourse. 'Common ground' is defined in (3).

(3)   The common ground:
      The set of propositions that both the speaker and the addressee believe.

                                              (Chierchia and McConnell-Ginet 1990: 290)

The common ground includes, but is not restricted to, information introduced overtly into prior discourse; see Heim (1982), Chierchia and McConnell-Ginet (1990), among others.

The distinction between definites and indefinites is illustrated in (4-6) for English. When an individual has no discourse antecedent and is unfamiliar to the common ground of the discourse participants, an indefinite is the only possible choice, as shown in (4).

(4)   No discourse antecedent:
       a. I met [*a* man] today.   b. *I met [*the* man] today.

If, on the other hand, an individual is already familiar to the discourse participants, a definite is the only possible choice, as shown in (5) and (6) (where co-indexation indicates coreference).[3]

(5)   A. I met [*a* man]$_i$ today.   *(novel)*
       B. What did [*the* man]$_i$ look like?   *(familiar)*

(6)   A. I met [*a* man]$_i$ today.   *(novel)*
       B. *What did [*a* man]$_i$ look like?   *(familiar)*

The familiar-novel distinction, crucial for determiner choice in many languages, is absent in Salish determiner systems. This can be shown by finding pairs of coreferential Determiner Phrases (DPs), one of which is used in a novel context, and one of which is used in a familiar context. If the same determiner is used in both novel and familiar instances, familiarity is not overtly encoded in that particular language.

The example from Sechelt in (7) will illustrate the point. (7a) is the first mention of a snake woman in the text; (7b) contains a subsequent mention of the same creature. In both cases, the same determiner *(lhe)* is used.[4]

(7)   a. t'i   súxwt-as   [*lhe*   7úlhka7   slhánay]$_i$ ...
           fact   saw-he   [*det*   snake   woman] ...
           'He saw [a snake-woman]$_i$ ...'   *(novel)*
       b. t'i   tl'um s-ukwal-s   [*lhe*   slhánay]$_i$: ...
           fact   then nom-speak-her   [*det*   woman]: ...
           'Then [the woman]$_i$ said: ...'   *(familiar)*
                                                   (Sechelt; Beaumont 1985: 188)

(3) There are exceptions to the claim that definite descriptions must always be familiar to the common ground of the discourse. For example, (i) can be uttered felicitously even in a situation where there was no previous mention of a dog and there is no dog in sight (Heim 1982: 371; see also Hawkins 1978).

   (i) Watch out, the dog will bite you.

Heim (1982) claims that novel definites are rendered felicitous by ACCOMMODATION (see Lewis 1979), a process which adjusts the common ground in the face of a violation of a felicity condition. See Heim (1982) and references cited therein for discussion of the conditions under which accommodation is possible.

(4) A list of abbreviations is given at the end of the paper. Examples taken from printed works are provided in the script of the original source, except that in Sechelt examples I substitute a 7 for Beaumont's ?.

The definite-indefinite distinction is not encoded in Sechelt. See Matthewson (1996) for examination of six other Salish languages, none of which encode a definiteness distinction.[5]

In languages like Sechelt, which have no overt distinction between definite and indefinite determiners, there are a priori two logical possibilities, given in (8). The first possibility entails a relatively trivial difference between languages; the second possibility suggests a more fundamental difference.[6]

(8) a. A definiteness distinction is not encoded on the determiners, but is still present in the grammar of the language (i.e. definite and indefinite determiners are homophonous).

   b. No definiteness distinction is present in the grammar of the language.

Matthewson (1996) argues in detail against the homophony analysis; the arguments are briefly summarized in (9):

(9) a. In English, definite DPs allow an Individual Concept Reading (Enç 1981). In St'át'imcets, DPs do not allow an Individual Concept Reading (Demirdache 1996a, b, c). If DPs in Salish were homophonous between definite and indefinite DPs, we would expect them to be able to display all the properties of definite DPs.

   b. DPs in St'át'imcets do not allow freedom of temporal reference, another property of definite DPs in English (Demirdache 1996a, b, c; see also Enç 1981, Musan 1995).

   c. The distinctions encoded in Salish determiner systems cross-cut the definite-indefinite distinction. For example, the assertion of existence distinction (see §3) divides up the semantic space differently from a definite-indefinite distinction.

   d. Looking outside the determiner system itself, there is no evidence for a definiteness effect elsewhere in the grammar, which might provide indirect support for an underlying definiteness distinction on the determiners.

   e. The homophony analysis requires that all determiners in all Salish languages (a set comprised of hundreds of non-cognate forms) be accidentally homophonous. Even setting aside the empirical problems listed in (9a-d), the conceptual disadvantages of the homophony analysis may outweigh the perceived advantages of maintaining a universally available definiteness distinction.

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(5) The languages investigated by Matthewson (1996) are St'át'imcets (Lillooet), Secwepemctsín (Shuswap), Sechelt, Lushootseed, Bella Coola, Upper Chehalis and Straits. Jelinek (1995: 512) also claims that Straits determiners do not encode definiteness.

(6) Thanks to Robert May (p.c.) for pointing out the first possibility.

2.2. Salish determiners do not encode specificity

Determiners in St'át'imcets do not encode specificity. The absence of specificity encoding is illustrated here using a test provided by Enç (1991).[7] Enç claims that in (10), a specific reading of the object *two girls* picks out two of the children already under discussion, while a non-specific reading picks out two separate girls, not already under discussion.

(10)   Several children entered my room. I knew two girls.

In a language which overtly encodes specificity such as Turkish, the second sentence of (11) is rendered in two different ways, depending on the specificity of the object.[8]

In the St'át'imcets example in (11), both specific and non-specific readings are available for the object of the second sentence.[9]

(11) a. [xʷʔit   ʔi   šk̓ʷəmk̓ʷúk̓ʷmiʔt-a]   ʔuɬxʷ
          [cw7it   i   sk'wemk'úk'wmi7t-a]   ulhcw
          [many   pl.det   child(redup)-det]   go.in
          'A lot of children came in.'

      b. ẑwát-ən-ɬkan   [ʔi   nʔánwaš-a   šməɬmə́mɬač̓]
          zwát-en-lhkan   [i   n7án'was-a   smelhmém'lhats]
          know-tr-1sg.subj [pl.det   two(human)-det[10]   girl(redup)]
          'I knew two girls.'

      i.   I knew two of the girls who came in.
or   ii. I knew two (unconnected) girls.   (St'át'imcets)

The object *i n7án'wasa smelhmém'lhats* 'two girls' is ambiguous with respect to specificity, showing that specificity is not overtly encoded by determiner choice. By the same reasoning as was outlined for definiteness in the previous section, I claim that the specificity distinction is absent from St'át'imcets determiners. While there is a lack of available evidence from other Salish languages, I predict that the same is true of other languages in the family.

2.3. There are no quantificational determiners in Salish

In this section, I will show that elements satisfying the definition in (12) are absent from Salish languages.

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(7) See Matthewson (1996) for evidence that St'át'imcets determiners also do not encode specificity as it is defined by Ludlow and Neale (1991), or by Fodor and Sag (1982).

(8) See also Chung (1981), Bauer (1994), who claim that determiners in some Polynesian languages encode a specificity distinction.

(9) St'át'imcets (Lillooet) examples are given both in a phonemic script and in the practical orthography devised by Jan van Eijk (see van Eijk and Williams 1981). The practical orthography version is provided in order to facilitate access for native speakers of the language.

(10) Certain determiners in St'át'imcets contain an enclitic *-a*, which attaches to the first full word in the DP. See §4.

(12) *Quantificational determiner* $=_{\text{def}}$ a quantificational element which occupies the syntactic position of a determiner (D^0) within the Determiner Phrase (DP).

I assume the basic X-bar structure for DP in (13).

(13)

```
                  DP
        Specifier      D'
              D⁰          Complement      (cf. Abney 1987)
```
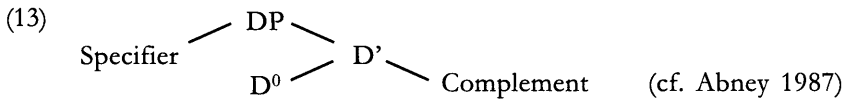
Quantificational determiners in English are illustrated in (14). The lexical items *every, no,* and *most* are in complementary distribution with definite or indefinite determiners.

(14) a. [*Every* man] loves hockey.   a'. [(*the) *every* (*the) man] loves hockey.
      b. [*No* man] loves hockey.   b'. [(*the) *no* (*the) man] loves hockey.
      c. [*Most* men] love hockey.   c'. [(*the) *most* (*the) men] love hockey.

This follows under the common analysis whereby the quantifiers occupy the D^0 position (since there may only be one D head in each Determiner Phrase).[11]

I will argue in the remainder of this section that Salish languages lack quantificational determiners. This does not mean that quantificational elements are lacking per se, but rather that quantificational elements may not occupy the head of DP.[12]

The discussion of quantifiers presented here is organized according to the strong-weak quantifier distinction. Weak quantifiers are those that are legitimate in *there*-insertion contexts in English. The quantifiers in (15a) are weak, while those in (15b) are strong (see Milsark 1974).

(15) a. There are some / many / three / no New Zealanders in the garden.
      b. *There are the / every / all / most New Zealanders in the garden.

2.3.1. The absence of strongly quantificational determiners in Salish

Universal quantifiers do not occupy determiner position in Salish; rather, they obligatorily co-occur with a determiner whenever they appear DP-internally. (16a,b), for example, would be ungrammatical if the determiners *ta, re* were absent. The obligatory co-occurrence of the quantificational element with the syntactic determiner shows that the quantifier does not occupy the D^0 position.

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(11) This is not unanimously accepted; see for example Stowell (1993), who proposes a separate phrase QP, of which the quantifiers in (14) presumably occupy the head position.

(12) The semantic literature on quantification consistently groups together pre-determiners, adjoined modifiers and determiners into one category called 'determiner' (see Barwise and Cooper 1981, van Benthem 1986, Jelinek 1995, Löbner 1987, Keenan and Moss 1985, Keenan and Stavi 1986, Partee 1995, Keenan 1996, among others; an exception is Rothstein 1988). The fact that Salish allows DP-internal quantifiers, but disallows quantifiers which occupy D^0, is argued by Matthewson (1996) to provide evidence that finer syntactic distinctions are relevant than those usually admitted by semanticists.

(16) a. na   ch'aw-at-as   [i7xw   ta   sw'i7ka]   [ta   slhenlhanay']
          rel   help-tr-3erg   [all   det   men]   [det   women]
          'All the men helped the women.' (Squamish; Demirdache et al. 1994)

      b. qwetséts   [xwexwéyt   re   sqélemc]
          leave   [all   det   man]
          'All the men left.'   (Secwepemctsín; Demirdache et al. 1994: 165)

A distributive universal quantifier corresponding to *each* is rare in Salish, but does exist in St'át'imcets, where it must co-occur with a determiner. Again, (17) is ungrammatical if the determiner which co-occurs with *ʑi7ʑeg'* is missing.[13]

(17) a. Púm-ən-łkan   kʷu   kándi   [ʑiʔʑəʕ'   ʔi   šk'wəmk'úk'wmiʔt-a]
          úm'-en-lhkan   ku   kándi   [ʑi7ʑeg'   i   sk'wemk'úk'wm'it-a]
          give-tr-1sg.subj   det   candy   [each   pl.det   child(redup)-det]
          'I gave each child some candy.'   (St'át'imcets)

      b. qʌlqʌl-č-mín-łkan   [ʑiʔʑəʕ'   ta   šqayxʷ-a   ʔácx-ən-an]
          qvlqvl-ts-mín-lhkan [ʑi7ʑeg'   ta   sqáycw-a   áts'x-en-an]
          bad(redup)mouth-appl-1sg.su [each   det   man-exis   see-tr1sg.conj]
          'Each man I saw, I swore at.'   (St'át'imcets)

Given the structure for DP in (13), the data in (16) and (17) suggest that universal quantifiers appear either in Spec, DP or adjoined to DP. Matthewson and Davis (1995), Matthewson (1996) argue that universal quantifiers (including the distributive universal) adjoin to DP; see also Demirdache et al. (1994).

There is no lexical item corresponding to the strong quantifier *most* in Salish. The meaning of *most* must be paraphrased, as for example in (18). The complex quantificational element *almost all* forms part of the DP constituent, yet does not replace the determiner *i...a*.

(18) [tqił   λuʔ   tákəm   ʔi   šmətmúłač-a]   λiq
      [tqilh   t'u7   tákem   i   smelhmúlhats-a]   t'iq
      [almost   just   all   pl.det   woman(redup)-det]   arrive
      'Most of the women arrived.' ('Almost all of the women arrived.') (St'át'imcets)

2.3.2. The absence of weakly quantificational determiners in Salish

Weakly quantificational elements corresponding to *many, a few* and the cardinal numbers co-occur with determiners when they appear inside DP. This is illustrated for *many* in (19).

(19) a. čís-n   [t   qəx̣ł   čawał[ó.]mš]
          come-3subj   [det   many   girl[dimin]]
          'Many girls come.'   (Upper Chehalis; M.D.Kinkade, p.c.)

      b. s-iʔ   kʷən-nəxʷ-s   [tsə   ŋáń   šə-šk'wə́m]
          nom-accomp   see-cont.tr-3poss   [det   many   actual-swim]
          'and he did see a bunch of swimmers.' (Saanich; Montler 1986: 251)

(13) As shown in (17), *ʑi7ʑeg'* 'each' may co-occur with either a plural or a singular determiner.

As with the strong quantifiers, the co-occurrence of the weak quantifiers with determiners indicates that the quantifier itself does not occupy the D^0 position in (19).

There is no determiner corresponding to the negative *no* in Salish. Negation is predicative, taking scope over a subordinate clause.

(20) a. *xʷi?*   *gʷ-əd-yíq̓us*
          neg   might-my-basket
          'I don't have a basket.' ('There is not my basket.')
                                                  (Lushootseed; Hess 1976: 567, Bates et al. 1994)

      b. *7axw*   [ti   ka   lhalas]   7ala   7ats
          neg   [det   irr   boat]   prep   here
          'There is no boat here.'   (Bella Coola; Nater 1984: 123)

      c. *xʷ7aʐ*   *kʷ-š*   *λiq*   *[kʷu   šmúɬač]*
          cw7aoʐ   kw-s   t'iq   [ku   smúlhats]
          neg   det-nom   arrive   [det   woman]
          'No lady came.'   (St'át'imcets)

3. Salish determiners encode 'assertion of existence'

We have so far examined three potential determiner contrasts, and seen that all three are missing in Salish. This section addresses the question of what distinctions are made by Salish determiner systems. The major proposal is given in (21).

(21)   Salish determiners encode 'assertion of existence'.

Before we define and defend (21), let us look at some data from St'át'imcets. (22) contains the discontinuous determiner *ti...a*. The DP *ti púkwa* can be used either as a definite (familiar) or an indefinite (novel) description. What both interpretations have in common is the presence of existential force, as indicated semi-formally in (22c).

(22)   *təxʷp-mín-ɬkan*   *[ti*   *púkʷ-a]*   *ɬkúnša*
        tecwp-mín-lhkan   [*ti*   púkw-*a*]   lhkúnsa
        buy-appl-1sg.subj   [*det*   book-*def*]   today

        a. 'I bought a book today.'   *(novel)*
        b. 'I bought the book today.'   *(familiar)*
        c. ∃ x, x a book, I bought x today.

The same determiner appears in (23), this time under the scope of the intensional operator *kelh* 'might'. As before, the DP *ti púkwa* may represent either a novel or a familiar individual, but in each case, existential force is involved.

(23)   *təxʷp-mín-ɬkan*   *kəɬ*   *[ti*   *púkʷ-a]*   *natxʷ*
        tecwp-mín-lhkan   kelh   [*ti*   púkw-*a*]   natcw
        buy-appl-1sg.subj   might   [*det*   book-*def*]   tomorrow

    a. 'I might buy a book tomorrow.'   *(novel)*
    b. 'I might buy the book tomorrow.' *(familiar)*
    c. $\exists$ x, x a book, I might buy x tomorrow.

There are clearly environments where one does not wish to assert the existence of an individual. In these environments, a different determiner *(ku)* is used, as in (24). Here, the existence of a book is not asserted. The sentence is translatable into English only with an indefinite determiner.

(24) *təxʷp-mín-ɬkan*   *kəɬ*   *[kʷu* *púkʷ]*   *natxʷ*
       tecwp-mín-lhkan   kelh   [ku   pukw]   natcw
       buy-appl-1sg.subj might [det book] tomorrow
       'I might buy a book tomorrow.'

The determiner *ku* is restricted in its syntactic distribution. When it appears on argument DPs, it must fall within the scope of a non-factual operator, such as negation, a *yes-no* question marker or the modal *kelh* 'might'. Thus, (25) is ungrammatical (cf. (22)), since the determiner *ku* cannot be used in a context which induces an assertion of existence, such as an ordinary declarative sentence.

(25) * *təxʷp-mín-ɬkan*   *[kʷu* *pukʷ]*   *ɬkúnša*
     * tecwp-mín-lhkan   [ku   pukw]   lhkúnsa
        buy-appl-1sg.subj [det book] today
        'I bought a book today.'

Notice that the reading represented by (25) is also impossible in English; its interpretation can be paraphrased as 'I bought a book today, but I do not assert that a book exists that I bought.'

An informal definition of the distinction being encoded here is given in (26).

(26) *Assertion of existence* (informal definition):
     "the speaker's intent to 'refer to' or 'mean' a nominal expression to have non-empty references —i.e. to 'exist'— within a particular universe of discourse (i..e not necessarily within the real world)" (Givón 1978: 293-4).[14]

The relevant notion relates to existential force.[15] For further illustration, see (27). In the sentences in the left-hand column, the DP *a fish* has existential force; the sentences assert the existence of a fish which Sophie bought. In the right-hand column, there is no assertion of existence; the sentences could be true in a world in which fish did not even exist. The difference between the left and right-hand columns is precisely what is encoded by determiner choice in St'át'imcets.

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(14) (26) corresponds to Givón's (1978) definition of 'referentiality'. Givón bases his definition on data from Bemba (Bantu), whose determiner system shows similarity with Salish systems.

(15) A DP with an assertion of existence determiner is a description; it does not directly pick out a referent in the real world.

(27)   Existencial force   No existencial force

Az'-en-as [*ti* sts'úqwaz'-*a*] kw-s Sophie buy-tr-3erg [det fish-det] det-nom Sophie Sofie bought a fish. ∃ x, x a fish, Sofie bought x.

Cw7aoz kw-s áz'-en-as [*ti* sts'úqwaz'-*a*] kw-s Sophie neg det-nom buy-tr-3erg [det fish-det] det-nom S. Sofie didn't buy a fish. ∃ x, x a fish, ¬ Sofie bought x.	Cw7aoz kw-s áz'-en-as [*ku* sts'úqwaz'] kw-s Sophie neg det-nom buy-tr-3erg [det fish-] det-nom S. Sofie didn't buy a fish. ¬ ∃ x, x a fish, Sofie bought x.

The different ways in which determiner distinctions divide up the possible semantic space in English and in St'át'imcets are summarized in (28-29). English uses the same determiner for all DPs whose discourse referents are novel, whether they receive an existential interpretation or not. St'át'imcets, on the other hand, uses the same set of determiners (those containing an enclitic ...*a*)[16] for all nominals which induce an assertion of existence, whether novel or familiar.

(28)   English:

	novel	familiar
existential interpretation	a	the
non-exis. interpretation	a	

(29)   St'át'imcets:

	novel	familiar
assertion of existence	X...a	X...a
non-assertion of existence	ku	

The shaded areas in (28-29) represent an impossible combination; I assume that an individual which is familiar must be agreed to exist. This is shown for St'át'imcets in (30); the non-assertion of existence determiner cannot be used when describing a familiar individual.

(30)   *təxʷp*   *kʷ*   *Mary*   [*ti*   *púkʷ-a*]$_i$
         tecwp   kw   Mary   [ti   púkw-a]$_i$
         buy   det   Mary   [det   book-exis]
         'Mary bought [a book]$_i$.'

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(16) The enclitic ...*a* is present on all and only the assertion of existence determiners in St'át'imcets, and is henceforth glossed as 'exis'.

ʔay	x̌uʔ	kʷ	ʔáma-š-aš	[kʷu	pukʷ]
ay	t'u7	kw	áma-s-as	[ku	pukw]
neg	just	det	good-caus-3erg	[non.exis.det	book]

'She doesn't like books.'

* 'She doesn't like [the book]ᵢ.'   (St'át'imcets)

For a coreferential reading in the second sentence of (30), an assertion of existence determiner *(ti...a)* must be used.[17]

In English it is possible (in a restricted set of circumstances) to use a definite DP with a non-existential interpretation (see footnote 3). An example is given in (31); the individual described by the definite DP does not exist yet.

(31)   I will meet [the first baby to be born in the year 2010].

Examples similar to (31) must be rendered with a non-assertion of existence DP in St'át'imcets, in accordance with the non-existence of the individual in present time.

(32)

xʷúz'-ɬkan	məlyí-š	[kʷu	xʷuz'	kʷúkʷpiʔ	lákʷuʔ	Fount.]
cúz'-lhkan	mely'í-s	[ku	cuz'	kúkwpi7	láku7	Fountain]
going.to-1sg.sub	marry-caus	[*non.exis.det*	going.to	chief	deic	Fountain]

'I will marry the next chief of Fountain.' (whoever it is)   (St'át'imcets)

We see that although definites in English usually have an existential interpretation, the requirement for assertion of existence DPs in St'át'imcets is stronger. Assertion of existence DPs assert existence, while definite DPs presuppose existence (and are subject to accommodation). Hence, definites in English can be used in some contexts in which an assertion of existence DP is inappropriate.[18]

While Salishanists have not previously used the term 'assertion of existence' in their descriptions of determiner systems, Matthewson (1996) argues that the assertion of existence distinction is present in a number of Salish languages, including Sechelt (Beaumont 1985), Bella Coola (Davis and Saunders 1975) and Secwepemctsín (Kuipers 1974). The restriction of non-assertion of existence determiners to the environment of a non-factual operator also holds in these lan-guages.[19]

A formal analysis of the assertion of existence distinction within Discourse Representation Theory (Kamp 1981) is presented in Matthewson (1996). It is pro-

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(17) For one principled exception to the claim that *ku*-DPs may not corefer with other DPs, see the discussion of modal subordination in Matthewson (1996).

(18) The contrast between (31) and (32) provides evidence that simple DPs in Salish are not presuppositional, in contrast to definite DPs in English. This in turn casts doubt on the analysis, already rejected above, whereby Salish determiners are all homophonous between definite and indefinite determiners.

(19) Straits Salish determiners do not encode assertion of existence (cf. Jelinek 1995, Jelinek and Demers 1994, Timothy Montler p.c.). Following Demirdache (1996a, b, c), Matthewson (1996) proposes that the absence of an assertion of existence distinction in Straits follows from the entirely deictic nature of determiners in that language.

posed that an assertion of existence determiner places a discourse referent into the universe of the main Discourse Representation Structure, while a non-assertion of existence determiner requires a discourse referent to be placed within a subordinate DRS. The latter restriction means that a non-assertion of existence DP obligatorily takes narrow scope with respect to a non-factual operator, and its discourse referent does not end up receiving existential force.

For the sake of completeness, it should be noted that as well as an assertion of existence / non-assertion of existence distinction, Salish determiners also encode a subset of the distinctions in (33).

(33)   Distinctions encoded in Salish determiner systems:
         a. pronominal features of gender and number
         b. deictic notions of visibility and proximity (with respect to the speaker)

In this section I have argued that determiners in Salish encode an assertion of existence distinction. In the following sections all four proposals about Salish determiners will be accounted for by means of a single parameter setting.

4. There are no presuppositional determiners in Salish

The three proposals argued for in §2, repeated here, may be united under the single claim in (34).

(1)   a. Salish determiners do not encode definiteness.
         b. Salish determiners do not encode specificity.
         c. There are no quantificational determiners in Salish.

(34)   There are no presuppositional determiners in Salish.

This section begins by defining presupposition, and then argues that (34) is the relevant generalization which underlies (1a-c).

4.1. Presupposition

In recent literature, presupposition is commonly viewed as a relation between a proposition and the common ground of the participants in the conversation; this view arises out of Stalnaker's (1974) work on pragmatic presupposition. A sentence imposes certain requirements on common background assumptions (i.e. the things that are taken for granted in a conversation); these background assumptions are the presuppositions. The definition in (35) highlights the discourse-related nature of presuppositions (see also Heim 1982, Soames 1989).

(35)   the hallmark of a presupposition is that it is taken for granted in the sense that its assumed truth is a precondition for felicitous utterance of the sentence and places a kind of constraint on discourse contexts that admit the sentence for interpretation (Chierchia and McConnell-Ginet 1990: 283).

To give a simple example, the utterance in (36) presupposes the information that someone emigrated to New Zealand, and will usually only be considered felicitous in case such information is part of the common ground at the time of utterance.[20, 21]

(36)   It was Joan who emigrated to New Zealand.

Let us now turn to the presuppositions induced by determiners. We shall see that the determiner types which are missing from Salish are precisely those which induce presuppositions of existence on the set ranged over by their common nouns.

4.2. Definite determiners presuppose existence

The individual corresponding to a definite DP such as *the woman* in English must be familiar to the discourse participants. If an individual is familiar to the discourse participants, then it is intuitively the case that it must be part of the common ground of those participants that the individual exists. This result is derived formally in Heim (1982).

According to Heim, individuals indicated by DPs are each represented by a FILE CARD.[22] Each file card contains all the information about a particular individual which is in the common ground of the discourse participants. This theory provides a simple way of distinguishing definite from indefinite DPs, as shown in (37).

(37)   a.   For every indefinite, start a new file card
              (indefinites are novel with respect to the file)
        b.   For every definite, update a suitable old file card
              (definites are familiar with respect to the file)   (Heim 1982)

The use of a definite DP therefore means that the speaker presupposes the content of the DP; the desriptive content of the DP has necessarily been entered into the common ground of speaker and hearer (the file) prior to that utterance.[23]

4.3. Specific determiners presuppose existence

Like definiteness, specificity has been linked to presuppositionality. Enç (1991: 9) claims that "specifics require that their discourse referents be linked to previously established discourse referents." As was argued above, a previously established

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(20) Presuppositions which are not already present in the common ground can be accommodated under certain circumstances; see footnote 3 above, Heim (1982), Stalnaker (1974), among others.

(21) Presuppositions induced by syntactic constructions such as clefts are present in Salish (see §5.3).

(22) File cards can be compared to Karttunen's (1976) 'discourse referents'.

(23) Existence within the file (the common ground of the speaker and hearer) must be differentiated from existence within the real world. For example, a DP may introduce a file card even if it has no referent in the real world. In (i), the indefinite under the scope of negation does not (under the preferred reading) correspond to an entity in the real world; it still introduces a file card, however.

(i)   Sophie didn't buy a fish.

While the indefinite in (i) introduces a temporary file card which lasts only under the scope of the negation, definite DPs always correspond to 'permanent' file cards, and thus induce a presupposition of existence. See Heim (1982), Matthewson (1996) for discussion.

discourse referent is necessarily understood by conversational participants to exist. Hence, specific DPs induce a presupposition of existence.[24]

4.4. Quantificational determiners presuppose existence

It is often claimed that quantifiers induce a presupposition of existence on the set ranged over by their common noun (see Enç 1991, Milsark 1974, Soames 1989, among others). For example, the quantifier *every* in (38) induces a presupposition that unicorns exist.

> (38)   Every unicorn likes bananas.

It is extremely difficult to assign a truth value to (38), if it is not assumed that unicorns exist. Since sentences without truth values are usually pragmatically infelicitous, (38) ends up sounding odd in a context where the discourse participants do not agree that unicorns exist. This pragmatic 'oddness' results from the failure of the presupposition of existence induced by the quantifier.

It has so far been argued that all the determiner types which are ruled out in Salish have one feature in common: they all involve presuppositions of existence. This common feature will be used in the following section to derive the absence of definite, specific and quantificational determiners in one fell swoop. However, before this is possible, we must deal with a potential problem with weak quantifiers.

It is well-known that weak quantifiers are at least two ways ambiguous in English (see Milsark 1974, Partee 1988, among many others). The so-called 'strong', or 'quantificational' reading of *many* in (39) (given in (39a)) requires that a large proportion of a set of aspens burned. The 'weak' or 'cardinal' reading, represented in (39b), is non-proportional, and requires only that the set of aspens which burned be large.

> (39)   Many aspens burned.
>
> a.   proportional reading: $\dfrac{|\,A \cap B\,|}{|A|} \geq k$ (k a fraction or %)
>
> b.   cardinal reading: $|\,A \cap B\,| \geq n$ (Partee 1988: 1)

The proportional reading is favored by focal stress on the quantifier, as in (40b), or by an overt partitive construction, as in (40c).

> (40)   a.   Many aspens burned.   *(proportional or cardinal)*
>   b.   MANY aspens burned.   *(proportional)*
>   c.   Many of the aspens burned.   *(proportional)*

Only the cardinal reading is available in *there*-insertion contexts, as shown in (41).

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(24) Under other definitions of specificity such as that of Ludlow and Neale (1991), specific indefinites may correspond to discourse referents which have not previously been introduced into the common ground. Matthewson (1996) investigates specificity in some detail, arguing that all types of specific DPs rely on an interaction between the speaker's state of knowledge and the hearer's state of knowledge. As such, all specific DPs can be ruled out in Salish by the Common Ground Parameter to be introduced below.

(41) a. There are many ghosts in my house. *(cardinal)*
      b. * There are MANY ghosts in my house. *(proportional)*
      c. * There are many of the ghosts in my house. *(proportional)*

Diesing (1992) claims that while strong quantifiers (such as *every, most*) always induce presuppositions of existence, only the proportional reading of weak quantifiers is presuppositional. Under the cardinal reading, weak quantifiers do not presuppose existence.

If Diesing's claim is correct, there is an apparent problem with the attempt to rule out all impossible determiner types in Salish from the single generalization that Salish lacks presuppositional determiners. It seems as if we cannot rule out weak quantifiers, under their cardinal reading, from occupying D^0 position. We would fail to rule out the sentences in (42), for example.

(42) a. * *Pácx-ən-łkan*   [*n-Pánwaš*   *šmúłač*]
          * áts'x-en-lhkan   [n-7án'was   smúlhats]
          see-tr-1sg.subj   [two(human)   woman]
          'I saw two women.'   *(cardinal)*   (St'át'imcets)
      b. * *q*ʷ*ačáč*   [*x*ʷ*Pit*   *šmúłač*]
          * qwatsáts   [cw7it   smúlhats]
          leave   [many   woman]
          'Many women left.'   *(cardinal)*   (St'át'imcets)

Matthewson (1996) argues in detail against Diesing's claim that weak quantifiers have a non-presuppositional reading. However, since there is not space here to outline these arguments, I shall merely point out that even if weak quantifiers were non-presuppositional on their cardinal reading, there would be an independent reason why the constructions in (42) would be ruled out in Salish languages.

Weak quantifiers which appear inside DP in St'át'imcets are not ambiguous; rather, they have only a proportional reading. This is shown in (43) for the weak quantifier *k'wík'wena7* 'few'. The sentence is acceptable when the proportion of angry children compared to the total number of children is small, as in (43a). On the other hand, the sentence is unacceptable when the number of children who are angry is small, but the proportion of angry children compared to the total number of children is large. This shows that a small cardinality is insufficient to license *k'wík'wena7*. Rather, a small proportion is required.[25]

(43) *waP*   *qlil*   [*Pi*   *k̓ʷík̓ʷənʔ-a*   *šk̓ʷəmk̓ʷúk̓ʷmit*]
      wa7   qlil   [i   k'wík'wen7-a   sk'wemk'úk'wm'it]
      prog   angry   [pl.det   few-exis   child(redup)]
      '(A) few (of the) children are angry.'   (St'át'imcets)

Possible readings:

    a. *True* in context: *(proportional)*
        There are 25 children waiting for Santa, and he doesn't come. 3 of
        them get angry.
    b. *False* in context: *(cardinal)*
        There are 4 children waiting for Santa, and he doesn't come. 3 of
        them get angry.
    c. *False* in context: *(cardinal)*
        There are 3 children waiting for Santa, and he doesn't come. All 3
        of them get angry.

The data in (43) (and other similar data involving the weak quantifier *cw7it* 'many') show that there are, for independent reasons, no cardinal weak quantifiers inside DP in St'át'imcets.[26] The cardinal reading is only available when a weak quantifier appears in main predicate position (see Matthewson 1996). It is therefore likely that weak quantifiers with a cardinal reading are independently ruled out from appearing in D^0 position in Salish. We can therefore exclude them from consideration in the following sections, concentrating only on accounting for the inability of proportional weak quantifiers to occupy D^0 position.

4.5. There are no presuppositional determiners in Salish

The preceding sections have argued that definite determiners, specific determiners, and quantificational determiners all induce presuppositions of existence. All these determiner types can therefore be ruled out in Salish by means of the single claim in (44).

    (44)   There are no presuppositional determiners in Salish.

(44) has been independently claimed for theory-internal reasons by Demirdache and Matthewson (1995b) and Demirdache (1996b). These authors provide evidence that while DPs containing quantifiers may undergo overt Quantifier Raising in St'át'imcets, simple DPs of the form [D NP] may not.[27] Assuming that presupposition correlates with Quantifier Raising along the lines of Diesing (1992), (44) accounts for the lack of QR with simple DPs.

In addition, Demirdache and Matthewson (1995b) argue that overt nominals are never syntactic topics in Salish (unless they contain an overt quantifier). The inability of overt simple DPs to be topical in Salish correlates with the inability of overt DPs to be presuppositional, in the following manner (see Demirdache 1996c). Syntactic topics have been argued to carry existential presuppositions (Reinhart 1982, Valduví 1995). If overt DPs cannot induce presuppositions, then it will follow that they cannot be topics.[28]

    (26) See Matthewson (1996) for some speculations as to why the cardinal reading might be lacking for DP-internal weak quantifiers in Salish.

    (27) This is true for one of the two principle dialects. In the other dialect, there is more freedom of word order for simple DPs.

    (28) Demirdache (1996c) notes that the ability of overt DPs in Salish to describe either novel or familiar discourse referents is non-problematic, since there is not a strict correlation between 'non-topical' and 'new information'. Thus, focussed DPs can be either novel or familiar.

5. The Common Ground Parameter

In this section, a Common Ground Parameter will be proposed, which states that determiners in Salish (unlike in English) may not access the common ground of the discourse. §5.1 introduces the parameter and shows how it derives the absence of presuppositional determiners in Salish, yet allows the presence of an assertion of existence distinction. The cross-linguistic predictions of the parameter are discussed in §5.2. Theoretical issues related to language typology and parameter setting are addressed in §5.3, and §5.4 and §5.5 discuss other aspects of the grammar of Salish which fall out from the Common Ground Parameter.

5.1. Presupposition relies on the common ground

Presupposition crucially relies on the notion of common ground. The common ground encompasses the beliefs of both the speaker and the hearer of any utterance. The relevance of the hearer's beliefs to presupposition is highlighted by Stalnaker (1974: 473), who claims that

> A proposition P is a pragmatic presupposition of a speaker in a given context just in case the speaker assumes or believes that P, assumes or believes that his addressee assumes or believes that P, and assumes or believes that his addressee recognizes that he is making these assumptions, or has these beliefs.

According to this definition, presupposition relies on three separate sorts of assumptions or beliefs, as shown in (45). Two of the three required components involve the speaker believing something about the hearer's state of knowledge.[29]

(45)   Assumptions or beliefs involved in a pragmatic presupposition P (following Stalnaker 1974):

      a. The *speaker's* assumption or belief that P

      b. The *speaker's* assumption or belief that the *hearer* assumes or believes P

      c. The *speaker's* assumption or belief that the *hearer* recognizes that the *speaker* assumes or believes P

The ability to access or encode what the speaker believes about the hearer's knowledge (as in (45b,c)) is missing in the determiner systems of Salish languages; only the speaker's personal assumptions or beliefs (as in (44a)) can be explicitly encoded in the determiner system. For example, the presupposition of existence induced by a definite determiner is missing in Salish. In (46), determiner choice indicates only that the speaker assumes or believes that the policeman exists. The determiner *ti...a* crucially does not indicate anything about the common ground of shared beliefs between speaker and hearer.[30]

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(29) This approach to presupposition is explicitly or implicitly adopted in most recent literature; see for example Heim (1982), Chierchia and McConnell-Ginet (1990).

(30) (46) is felicitous both in contexts where the hearer has no knowledge of a policeman, and in contexts where the hearer is already familiar with the policeman.

(46)   túp-uṅ-aš   [ti   plíšmən-a]   [kʷ-š   John]
       túp-un'-as   [ti   plísmen-a]   [kw-s   John]
       hit-tr-3erg   [det   policeman-exis]   [det-nom John]
       'John hit a / the policeman.'   (St'át'imcets)

√ Speaker assumes or believes that the policeman exists.
x Speaker assumes or believes that the hearer assumes or believes
  that the policeman exists.
x Speaker assumes or believes that the hearer recognizes that the
  speaker assumes or believes that the policeman exists.

This view of St'át'imcets is supported by van Eijk (1985: 223-4), who notes that
when it comes to determiner choice, 'the speaker is the sole arbiter'. See also
Kuipers (1967: 137) on the irrelevance of hearer knowledge in the Squamish deter-
miner system.

The inability of Salish determiners to access the common ground leads me to
propose the following parameter (for the final formulation, see (51) below).

(47)   *Common Ground Parameter*

Determiners may access the common ground of the discourse:

Yes: { English, ... }   No: { Salish, ... }

According to the Common Ground Parameter, English determiners can access
distinctions which rely on the shared beliefs of speaker and hearer, while Salish
determiners cannot. However, both Salish and English access and encode speaker
knowledge. Access to speaker knowledge must be a language universal, since speech
without the expression of speaker beliefs would result in a dearth of declarative
sentences. We can therefore predict the following typology of language types.

(48)   English Salish   *   *

	English	Salish	*	*
Speaker knowledge is accessible:	+	+	−	−
Common ground is accessible:	+	−	+	−

The negative setting of the Common Ground Parameter in Salish immediately
accounts for the absence in Salish of a definiteness distinction, a specificity
distinction, and of quantificational determiners, since as was shown above, all of
these three determiner-types crucially rely on information contained in the common
ground.

The presence of an assertion of existence distinction in Salish, on the other
hand, is compatible with a negative setting of the Common Ground Parameter,
since whether the speaker asserts existence or not is independent of the common
ground, as outlined immediately above. Hence, all facets of Salish determiner
distinctions are in accordance with the parameter in (47).

5.2. Predictions of the Common Ground Parameter

The Common Ground Parameter is binary; it divides the world's languages into two groups, those whose determiners may access the common ground, and those whose determiners may not. However, there are finer issues which need to be addressed regarding the precise predictions made by the parameter. This section will not attempt to provide complete answers to these questions (since complete answers will necessarily involve a broader range of cross-linguistic evidence from other language families).

Under the strongest interpretation of the parameter, it predicts that the set of properties which access the common ground will pattern together cross-linguistically. Thus, languages will either allow all presuppositional determiner-types, or disallow all presuppositional determiner-types. An immediate problem with this prediction arises with specificity. For example, while English allows presuppositional determiners, it does not encode specificity. Indeed, it is still a matter of debate whether specificity is even relevant in the semantics of English DPs (see e.g. Heim 1989 and references cited therein).

With regard to this problem, it is useful to consider the rarity of systems which have been claimed to encode specificity, and in particular the rarity or absence of systems which encode a Ludlow and Neale-type specificity (see Matthewson 1996). Irene Heim (p.c.) and Ken Hale (p.c.) both suggest eliminating specificity altogether from the list of possible determiner distinctions. If specificity is eliminated, we can make the very strong prediction that there are only two types of languages: those whose determiners access the common ground, and those whose determiners do not. The two language-types are illustrated in (49).

(49)

	English	Salish
definiteness	+	−
quantificational Ds	+	−
Common Ground Parameter	+	−

Further research is necessary before this prediction can be either validated or disproven.

5.3. Parameter setting

Based on learnability considerations, I predict that the default setting of the Common Ground Parameter is negative. In other words, children will start out with a Salish-type system and require positive evidence to switch to an English-type system.

The reason for adopting this hypothesis is that a child would require negative evidence to change from a system which allows presupposition to a system which disallows presupposition. On the other hand, it is plausible that positive evidence

will suffice to inform a child that a particular language possesses presuppositional determiners.

For the sake of concreteness, I speculate that the triggering element for a child to switch the Common Ground Parameter to a positive setting will be any quantificational determiner. Once a child learning English has learned that the lexical item *every* (or *no*, or *most*) is (a) a determiner, and (b) a quantifier, the child will have acquired the knowledge that English possesses quantificational determiners. Since quantificational determiners always induce presuppositions of existence, it must follow that English allows presuppositional determiners, and consequently that a definiteness distinction will also be expected on the determiners.

This makes predictions about language acquisition, which may be supported or falsified on the basis of subsequent research. In particular, I predict that young children learning English-type languages will show evidence of a non-presuppositional determiner system, perhaps utilizing assertion-of-existence rather than definiteness as their major distinction.[31]

5.4. Can Salish access the common ground at all?

The Common Ground Parameter parameterizes the semantics of a small subset of lexical items, namely determiners. It is not a 'semantic parameter', in the sense that it is not being claimed that Salish languages can never access the common ground of the discourse. For example, presupposition is induced in Salish by syntactic constructions such as clefting. (50a) induces the presupposition in (50b).

(50) a. *niɬ*   *š-Henry*   *ti*   *qaxʷəxʷ-š-táli-ha*   *ti*   *qíl�axq-a*
          nilh   s-Henry   ti   qacwecw-s-táli-ha   ti   qíl'q-a
          foc   nom-Henry det   break-caus-erg.extr-exis det   chair-exis
          'It was Henry who broke the chair.'   (Stʼátʼimcets)
      b. Someone broke the chair.

The presupposition in (50) is induced by a specific syntactic structure, namely clefting. If presuppositions are only induced by syntactic structures in Salish, we can restate the Common Ground Parameter as in (51).

(51) *Common Ground Parameter* (strong version)
      The common ground may be accessed:

      a. By lexical items: Yes: { English, ... } No: { Salish, ... }
      b. By syntactic structures: Yes: { English, Salish, ... } No: Ø

The formulation in (51) is a stronger formulation than the version given in (47) above, which rules out access to the common ground only by a subset of lexical items, namely determiners. We will see evidence for the extension beyond the determiner system in the following subsection.

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(31) The Common Ground Parameter does not rule out a language like English from also possessing an assertion-of-existence distinction. Matthewson (1996) argues that while assertion-of-existence is not encoded on English determiners, the distinction is still relevant for coreference possibilities. Further research is required into this area.

I will from now on adopt the stronger version of the parameter given in (51). According to (51), the locus of the difference between the possible two language types is in the lexicon, which fits in with proposals that parametric differences may be situated only in the lexicon (see e.g. Borer 1983, Manzini and Wexler 1987, Chomsky 1993). If the lexicon is the only place where languages may differ, we can even propose that the ability of particular syntactic structures to induce presuppositions will be universal; what may vary is only whether particular lexical items (such as determiners) may induce presuppositions.[32]

5.5. Further implications of the Common Ground Parameter

The Common Ground Parameter has implications which extend beyond the determiner system. In this section I briefly mention two such implications, namely the deictic system and a set of speaker-oriented particles.

5.5.1. Deictics in Salish are speaker-oriented

In their cross-linguistic survey of deictic systems, Anderson and Keenan (1985: 277) observe that

> All languages identify locations by reference to that of the *Sp[eaker]*. It is also possible to determine locations by reference to that of the *Adr[essee]*, and many (but not all) languages utilize this possibility as well.

In this case, we see a subset —superset relation between languages which allow only speaker-oriented distinctions, and languages which allow both speaker-oriented and hearer-oriented distinctions.

Deictics throughout Salish encode proximity to, and visibility to, the speaker. Salish deictic systems are therefore speaker-oriented, a fact which is not only consistent with the Common Ground Parameter, but which even suggests a strengthening of it. Not only is hearer *knowledge* not accessed or encoded, but hearer *location* is also ignored in favour of speaker location.

St'át'imcets is a good example of such a system; the deictics encode visibility, proximity and a 'pivoting / non-pivoting' distinction (which relates to whether the place described is considered to be the centre or orientation point of an area; van Eijk 1985: 201).

(32) There is one apparent counter-example to the claim that lexical items never induce presuppositions in Salish. The adverb *t'it* 'also' induces a presupposition that a certain event has taken place, as shown in (i).

(i)   *xʷíl̓-əm*   *x̌it*   *[k*   *Mary]*   *[kʷu*   *šx̌úšum]*
      cwíl'-em   t'it   [k   Mary]   [ku   sxúsum]
      look.for-intr also   [det   Mary]   [non.exis.det   soapberry]
      'Mary also looked for soapberries.'
  P: Someone other than Mary looked for soapberries.   (St'át'imcets)

This raises the possibility that what is absent from Salish is lexical items which introduce presuppositions of existence, rather than presuppositions consisting of propositions describing events. Further research is required into such matters.

(52)

		pivoting	non-pivoting
visible	proximal	l-ts7a	lá-ti7
	distal	l-t7u	lá-ta7
invisible	proximal	l-kw7a	lá-ku7
	distal	l-kw7u	lá-kw7a

(van Eijk 1985: 201)

Both the visibility and the proximity categories are speaker-oriented:

> The division 'visible' vs. 'invisible' hinges on whether the thing or place meant is visible or invisible to the speaker. The categories 'proximal' vs. 'distal' express that the thing or place meant is (relatively) close to vs. (relatively) far from the speaker (van Eijk 1984: 201).

The deictic component of determiner systems (see (33) above) is also speaker-oriented. For example, the Upper Chehalis determiner system marks three degrees of proximity, glossed as 'by speaker', 'near speaker' and 'not near speaker' (Kinkade 1964).

5.5.2. Morphological encoding of speaker knowledge

At least some Salish languages obligatorily encode the speaker's mental relationship to an event. Information is encoded about whether the event was personally witnessed by the speaker, and if not, exactly how the speaker came about his or her information. This is true in at least Bella Coola and St'át'imcets; further research may well turn up similar situations in other languages.

Bella Coola and St'át'imcets both contain a set of particles (suffixes and clitics respectively) which indicate how the speaker received the knowledge s/he is reporting on, and how strongly committed s/he is to the truth of the utterance. Examples are given in (53). In (53a,b), quotative particles indicate that the speaker heard the information from a third person, while in (53c), the speaker is surmising on the basis of available evidence.[33]

(53) a. *ksnmak-k*ʷ   *[ti*   *ʔimlk]*
          work-*quot*   [non.exis.det   man]
          'I am told the man, whom I have not seen, is working.'
                                          (Bella Coola; Davis and Saunders 1975: 31)

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(33) Other suffixes in Bella Coola include *-ma* 'conjectural' and *-ck* 'inferential' (Davis and Saunders 1975: 34). Other clitics in St'át'imcets include *an'* 'evidential', and *tu7* 'complete' (a version of speaker witness). For a full list of the St'át'imcets clitics, see van Eijk (1985).

b. *ẋáx-alqʷəm̓*   *kʷuʔ*   [*k*   *John*]
zac-al'qwem'   ku7   [k   John]
long-appear   *quot*   [det   John]
'John is tall.' (speaker has heard it from somebody else)
                                                                (St'át'imcets)

c. *šáma?*   *k̓a*   *kʷu*   *šqwal̓-ən-táli*
sáma7   k'a   ku   sqwal'-en-táli
white.person   *surmise*   det   tell-tr-erg.extr
'It must have been a white man who told her.'
                                        (St'át'imcets; van Eijk 1985: 234)

Sentences without any of these speaker-knowledge particles unambiguously encode speaker witness. Thus, "any declarative utterance in Bella Coola implies that the speaker has witnessed what he reports" (Davis and Saunders 1975: 15). Similarly, in St'át'imcets, a declarative sentence without any speaker-knowledge particles unambiguously implies that the speaker has personal knowledge of the events or states reported on.

(54)   a. *ẋáx-alqʷəm̓*   [*k*   *John*]
zac-al'qwem'   [k   John]
long-appear   [det   John]
'John is tall.'
(Speaker has seen John, and knows first-hand that John is tall.)

b. *túp-un̓-aš*   *š-John*   [*ti*   *plíšmən-a*]
túp-un'-as   s-John   [ti   plísmen-a]
punch-tr-3erg   nom-John   [det   policeman-exis]
'John hit a policeman.'
(Speaker witnessed the event.)

The necessary speaker witness of declarative sentences accounts for the ungrammaticality of the sentences in (55) (as well as (25) above). In both languages, a declarative sentence (which implies speaker witness) clashes with a non-assertion-of-existence determiner (which entails that the individual concerned is not known by the speaker to exist). Since it is inherently contradictory for the speaker to have witnessed an event without holding the belief that the participants in the event exist, ungrammaticality results.[34]

(55)   a. * *ksnmak*   [*ti*   *ʔimlk*]
work   [*non.exis.det*   man]
'The man is working.'   (Bella Coola; Davis and Saunders 1975: 31)

___

(34) Mere semantic contradiction does not entail ungrammaticality, as shown by the grammaticality of (i):

(i) No linguists are linguists.

The sentences in (55) do not involve semantic contradiction, but rather grammatical contradiction. The grammatical encoding of existence (by the lack of a speaker-knowledge particle) conflicts with the absence of grammatical encoding of existence (by the determiner). Hence, (55a, b) are parallel to examples containing contradictory gender agreement in languages such as German.

b. * *túp-uṅ-aš*   *š-John*   [*kʷu*   *plíšmən*]
    * túp-un'-as   s-John   [*ku*   plísmen]
      punch-tr-3erg   nom-John   [*non.exis.det*   policeman]
      'John hit a policeman.'   (Stʼátʼimcets)

The non-ambiguity of a sentence which contains no particles suggests the presence of a null particle with a default interpretation of 'speaker witness'.[35]

The Common Ground Parameter clearly predicts that if any morphological marking of knowledge of an event is present in Salish languages, it will only mark speaker knowledge. This accords with the facts, since it is purely the speaker's mental relationship to, or state of knowledge about, an event which is encoded. Furthermore, the presence of the particles underscores the inherently speaker-oriented nature of the assertion of existence distinction. The existence-asserting determiners assert nothing more nor less than that the speaker has personally witnessed an individual. Given this, the speaker-oriented particles fall out as a natural way of enabling speakers to talk about things they have not personally seen.

6. How many parameters?

Although deriving several apparently disparate features of Salish languages, the Common Ground Parameter alone cannot account for every difference between Salish and English. In this section I briefly discuss some alternative proposals about the split between English-type languages and Salish-type languages, namely those of Jelinek (1995) and Baker (1996). I argue that these approaches, which rely basically on a single parameter, cannot capture the complex determiner facts discussed here.

6.1. An alternative: the Pronominal Argument Parameter

Jelinek (1995) aims to account for major differences between Straits Salish and English by means of the Pronominal Argument Parameter (see also Jelinek 1984, Baker 1991, 1995, 1996, Jelinek and Demers 1994). This parameter, given in (56), is intended to derive the presence of null arguments, free word order, and the lack of determiner quantifiers in Straits.

(56)   In languages with exclusively pronominal arguments, only clitics and affixes occupy argument positions.   (Jelinek and Demers 1994: 698)

Straits Salish is [+ Pronominal Arguments]; English is [– Pronominal Arguments].

The Pronominal Argument Parameter in turn derives from a proposed fundamental morphological difference between Salish and English, namely that there is no noun-verb distinction in the Salish lexicon. There are no zero-level categories N and V, according to Jelinek; rather, the lexicon is filled with one open class of *inflected predicates*. Predicates, while still in the lexicon, already contain pronominal markers for any internal arguments.

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(35) Compare argumentation in Déchaine (1993) for the presence of a null tense operator where the absence of overt tense marking leads to unambiguous temporal interpretations.

One consequence of the claim that only clitics and affixes occupy argument positions is that all overt DPs in Straits must appear adjoined to the clause. The adjoined position of overt DPs derives the lack of quantificational determiners, as long as it is assumed that determiner quantification necessarily involves the possibility of lexical arguments in argument positions (see Jelinek 1995: 532). Since Pronominal Argument languages lack lexical arguments in argument positions, determiner quantification must also be absent.

As summarized in (57), the linking of Pronominal Argument status to the absence of determiner quantifiers is only a one-way implication, according to Jelinek. There are languages (in Northern Athabaskan, for example) which lack determiner quantifiers, but which allow overt DPs to appear in argument positions.

(57)   Absence of DPs in argument position $\Rightarrow$ Absence of D-quantification
        Absence of D-quantification $\nRightarrow$ Absence of DPs in argument
                                                   position

If it is true that Salish languages are Pronominal Argument languages, the absence of quantificational determiners will follow. However, there are several respects in which Jelinek's (1995) analysis fails to account for the Salish facts. These are briefly summarized in (58).

(58)   a. Jelinek's account does not distinguish between quantifiers which
           appear in D^0 position, and quantifiers which appear elsewhere
           within DP (e.g. adjoined to DP). As such, she cannot explain why
           many Salish languages disallow the former, while allowing the latter.
        b. Jelinek's account does not explicitly link the absence of definiteness
           to the absence of quantificational determiners. It therefore appears
           accidental that all Salish languages lack both definite and quantifica-
           tional determiners.
        c. There is ample evidence from many Salish languages that the
           Pronominal Argument analysis is incorrect. On the categorial issue,
           see Davis and Saunders (1974), van Eijk and Hess (1986), Mattina
           (1994, in prep), Beck (1995a, b), Davis and Matthewson (1995),
           Demirdache and Matthewson (1995a), Matthewson and Demirdache
           (1995) and Nater (1984), among others. For syntactic evidence
           against the Pronominal Argument analysis, see Matthewson et el.
           (1993), Davis (1993), Demirdache and Matthewson (1995a), Mat-
           thewson and Davis (1995), among others.

The empirical problems encountered by the Pronominal Argument Parameter cast doubts on its usefulness as an explanation for the lack of quantificational determiners.

The Pronominal Argument Parameter constitutes an attempt to tie together diverse aspects of Salish morphology and syntax under a single explanation. It does so, however, at the expense of a complete explanation for Salish determiner systems. The Pronominal Argument approach has nothing to say about the assertion of existence contrast or the lack of specificity encoding, for example. The generalizations which emerge from in-depth examination of determiner systems receive a unified explanation so far only under the Common Ground Parameter approach.

6.2. The Polysynthesis Parameter (Baker 1996)

Baker (1996) offers a two-part 'macro-parameter' intended to derive typological differences between radical head-marking languages (a group which includes Salish) and non-radical head-marking languages like English. The relevant portion of the parameter is given in (59).

(59)   Morphological Visibility Condition / Polysynthesis Parameter:
       A phrase X is visible for Theta-Role assignment from a head Y only if
       it is coindexed with a morpheme in the word containing Y via an
       agreement relationship (Baker 1996: 14).

Obligatory agreement morphology for each argument appears on the verb. These agreement morphemes absorb the verb's Cases. In order to avoid a violation of the Case filter, overt argument DPs must always appear in adjoined positions (where they do not require Case). These overt DPs are coindexed with null pronouns in argument position.

Baker's proposal makes several syntactic predictions, which hold up in Mohawk but not in Salish. For example, the claim that overt argument DPs do not occupy argument position is argued to be incorect for the three Northern Interior Salish languages by Matthewson et al. (1993). Condition C facts in these languages show subject-object asymmetries, which is not predicted if all overt DPs are adjoined. See also Davis (1993, 1994, 1995a, b), Demirdache (1995a).[36]

Baker also predicts that a language with a positive value for the Polysynthesis Parameter will lack non-referential quantifiers (by which he means quantifiers which take singular agreement, as in English *Every man likes his dog*). The absence of such quantifiers follows from the condition in (60):

(60)   Quantified NPs (and wh-traces) can have anaphoric relations only with
       pronouns which they *A-bind* at S-structure (Baker 1995: 43).

The condition in (60) rules out non-referential DPs in Mohawk, since all overt nominals in that language appear in A-bar positions at S-structure. Therefore, these overt nominals cannot be coindexed with the pronominals which appear in argument positions; this results in the overt nominals being unlicensed (see Baker 1995: 43).

Given that Salish languages allow overt nominals in argument positions, we do not expect non-referential DPs to be ruled out in Salish. This is correct, since St'át'imcets allows singular agreement with the distributive universal quantifier (see Davis 1993, Matthewson 1996, (17b) above).

The Polysynthesis Parameter is tied directly to observable morphological features of radical head-marking languages, namely rich agreement morphology. It should therefore be the case that any languages with radical head-marking properties behave similarly to Mohawk for the range of syntactic predictions which follow from the parameter. Unfortunately, Salish languages contain rich agreement morphology, yet do not uphold the relevant syntactic predictions. The Polysynthesis Parameter, like

(36) There are several other cases of subject-object asymmetries in St'át'imcets. Only subject DPs can undergo 'raising to object', and only subject DPs can raise to a position between an auxiliary and a main verb (see Davis 1995a). Polarity licensing also shows subject-object asymmetries (Matthewson 1996).

the Pronominal Argument Parameter, attempts to achieve maximally broad empirical coverage, but sacrifices accurate predictions in specific areas of the grammar.

6.3. There is more than one parameter

The Common Ground Parameter proposed in this paper is not a 'macro-parameter'. It does not alone derive radically different language-types. Rather, I claim that multiple parameter settings are required to derive all the features of Salish languages. Salish languages lie somewhere along a continuum between truly 'pronominal argument' languages such as Mohawk, and languages like English with impoverished agreement morphology. In this respect, I concur with Speas (1990: 123), who in turn agrees with Hale (1985: 7) that "there is no single parameter giving rise to the various properties commonly associated with the term 'non-configurational'."

It remains an empirical issue whether individual phenomena such as the possibility of null arguments or the presence of rich agreement morphology in Salish languages should be tied to the determiner facts. Current approaches which link the lack of quantificational determiners to morphological features of agreement suffer from empirical failings, as outlined above. However, future research may well reveal ways in which additional features of Salish can be derived from the same parameter as the determiner facts, without sacrificing empirical coverage.

7. Conclusions

There are many differences between Salish languages and English; this paper has concentrated on differences in the determiner and quantification systems. Four proposals were made about the nature of determiner systems in Salish:

(61) a. Determiners do not encode definiteness.
      b. Determiners do not encode specificity.
      c. There are no quantificational determiners.
      d. Determiners encode 'assertion of existence'.

The three generalizations in (61a-c) were argued to follow from the lack of presuppositional determiners in Salish, a claim which in turn follows from the parameter in (62), given that presupposition requires access to the common ground of the discourse.

(62) *Common Ground Parameter*
      The common ground may be accessed:

      a. By lexical items: Yes: { English, ... }   No: { Salish, ... }
      b. By syntactic structures: Yes: { English, Salish, ... }   No: Ø

It has been proposed that there is not one single macro-parameter which differentiates Salish from English; rather, a combination of several parameter settings are required to produce the Salish pattern.

Abbreviations

abs = absolute, accomp = accompanying, appl = applicative, caus = causative, conj = conjunctive, cont = contemporaneous, deic = deictic, det = determiner, demon = demonstrative, dimin = diminutive, erg = ergative, exis = existential, extr = extraction, fact = factive, foc = focus, inch = inchoative, intr = intransitive, neg = negative, nom = nominalizer, ooc = out of control, pl = plural, poss = possessive, pred = predicate, prog = progressive, quot = quotative, redup = reduplication, sg = singular, s.t. = something, stat = stative, subj = subject, tr = transitive.

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ARGUMENT STRUCTURE AND ANIMACY ENTAILMENT

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1. Introduction[1]

This paper delineates and accounts for restrictions on the distribution of arguments whose thematic roles select them for animacy. An example of such an argument is the subject of (1) which, following standard accounts, must be animate on account of the selectional properties of the AGENT role assigned by "steal."

(1)   Mary stole the money.

The effect of these selectional properties is attested by the unacceptability of the inanimate substitution in (2).

(2)   *The wind stole the money.

I argue that this requirement of animacy, which I shall refer to as "animacy entailment", represents part of the AGENT thematic relation. Moreover, I assume that animacy entailment is a theoretically genuine part of any thematic relation that selects an animate argument. As I will show, this makes it possible to discern abstract syntactic principles constraining the generation of all such thematic relations.

Another important property of the AGENT thematic role assigned to the subject position of (1), or rather of its animacy entailment, is reflected by the fact that there are sentences like (3), whose syntactic structures are identical to (1), but in which the thematic role of AGENT —or, more precisely, the animacy entailment— is optional.

(3)   Mary hit John.

Here, the role of AGENT, or rather its animacy entailment, can be dispensed with entirely. For example, (3) could perfectly well describe a situation in Mary is asleep

and falls out of bed, happening to collide with John on the floor. The optionality of agency (animacy entailment) here perhaps is made even clearer by the inanimate substitutions in (4) - (5).

(4)   A rock hit John.   (5)   A hail stone hit John.

What each of (3) - (5) demonstrate is that the AGENT role, or more specifically the animacy entailment, associated with the subject of "steal" occupies a theta position in which it can optionally be generated by means independent of any lexical properties of "steal" itself.

This work is concerned just with any animacy entailment that is like that involved in the AGENT role insofar as it is both: (a) selected in some theta position by at least one verb in the language (as it is in the subject of "steal" in (1)); and (b) optionally generable in that same theta position in syntactically parallel sentences in which it happens not to be selected (as it is in the subject of "hit" in (3)).

Section 2 argues that this kind of animacy entailment is produced by the application to syntax of a certain optional lexical interpretation made available in accord with abstract syntactic principles.[2] I refer to such animacy entailment as "lexico-interpretational"[3] —regardless of whether it ends up being optional as in (3), or obligatory as in (1).

This leads me to argue that the AGENT role, as well as the "SENSOR" (an emotional PATIENT)[4], "VOLUNTEER" (roughly, an interested THEME)[5] and BENEFICIARY (roughly, an interested GOAL)[6] roles, discussed below, are the product of two underlying factors.

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(2) See Minkoff (1994) for a related proposal.

(3) I adopt this terminology to reflect the fact that the interpretation responsible for producing this animacy entailment is linked to the lexicon in a way that distinguishes it from a certain other kind of interpretation, which also happens to produce animacy entailment. On the one hand, as discussed in the text, lexico-interpretational animacy entailment can in principle be selected by particular lexical items. On the other hand, another form of animacy entailment is interpretational, but never can be selected by any lexical item. This form of animacy entailment can be generated in the subjects of unaccusatives, as in the subject of "arrive" in (i.a); in the derived subjects of passives, as in the subject of "was examined" in (ii.a); or in the derived subjects of raising verbs, as in the subject of "seeming" in (iii.a).

    (i.a)   In order to make a point, Mary arrived hungry.
    (i.b)   *In order to make a point, the package arrived dirty.
    (i.c)   The package arrived dirty.
    (ii.a)   Mary was examined by the doctor (in order to please her worried friends).
    (ii.b)   *The specimen was examined by the doctor (in order to please Mary's worried friends).
    (ii.c)   The specimen was examined by the doctor.
    (iii.a) To frighten away predators, the blowfish are seeming to be really big.
    (iii.b) *To frighten away thieves, the packages are seeming to be really big.
    (iii.c) The packages seem to be really big.

This animacy entailment is shown to be interpretational by the acceptability of the "c" examples. However, it is not lexico-interpretational, since it can never be selected by any lexical item of the relevant category. In other words, no unaccusative verb ever selects lexico-interpretational animacy entailment in its subject (cf. Subsections 2.2 and 2.6); no passive ever selects lexico-interpretational animacy entailment in its surface subject; and no raising verb ever selects lexico-interpretational animacy entailment in its surface subject.

    (4) The nature of this role is considered in subsection 2.1.
    (5) The nature of this role is considered in subsection 2.5.
    (6) The nature of this role is considered in subsection 2.5.

One of these factors is purely a reflex of syntactic configuration in the sense of Hale and Keyser (H&K) (see Hale & Keyser this volume): I assume that syntax alone generates the so-called "thematic roles" that H&K discuss.[7] The other factor is the phenomenon of lexico-interpretational animacy entailment (LIAE), introduced above, which is produced by an optional interpretation that applies to syntax, and adds the factor of animacy entailment, in this manner augmenting the basic, syntactically generated, role.[8]

(7) The only exception to this may be the role of AGENT. For example, in Hale and Keyser (1991a), AGENT is a configurationally determined notion. So, for example, the sense of an AGENT role in the subject of (i) would derive from properties of syntactic configuration.

　　(i)　Mary shelved the book.

I claim that, in an example like (i), syntactic configuration is responsible for creating the sense that the subject is a CAUSER. As detailed in the text, the sense that this CAUSER is specifically an AGENT follows, not from syntactic configuration but, rather, from the application of an optional interpretation that generates lexico-interpretational animacy entailment.

(8) As is detailed below, LIAE is responsible for converting the CAUSER into an AGENT, the THEME into a "VOLUNTEER" (roughly, and interested THEME), the PATIENT into a SENSOR (an emotional PATIENT), and the GOAL into a BENEFICIARY (roughly, an interested GOAL). Two points are worth noting in this regard.

First, the animacy whose entailment is at issue is of a certain special kind. For example, the subjects of (i) and (ii) are animate, yet clearly that of (ii) conflicts with the LIAE associated with the AGENT role.

　　(i)　Mary stole my money.　　　　　(ii)　*The bamboo stole my money.

Thus, at a minimum, LIAE appears to be consistent with nouns that are human, but not with those that are botanical. (Note that (ii) remains unacceptable even if one assumes that the bamboo, by its fast rate of growth, has caused the money in question to be pushed away from the speaker. This demonstrates that the problem with (ii) cannot be that the subject lacks the ability to carry out the physical aspects of the action.)

Second, the generation of LIAE has syntactic consequences. For example, the (subject-to-subject) control relation in (iii) - (v) is licensed only when LIAE converts the CAUSER into an AGENT.

　　(iii)　Mary$_i$ moved the papers$_j$ onto the floor (PRO$_i$ to stand on t$_j$)
　　　　　AGENT
　　(iv)　Mary$_i$ accidentally moved the papers$_j$ onto the floor (*PRO$_i$ to stand on t$_j$)
　　　　　CAUSER
　　(v)　The fan$_i$ moved the papers$_j$ onto the floor (*PRO$_i$ to stand on t$_j$)
　　　　　CAUSER

The control relation in (vi) - (viii) is licensed only when LIAE converts the THEME into a "VOLUNTEER" (roughly, an interested THEME).

　　(vi)　(PRO$_i$ to get washed), I sent John$_i$ to the lake.
　　　　　　　　　　　　　　VOLUNTEER
　　(vii)　(*PRO$_i$ to die), I sent John$_i$ to the lake.
　　　　　　　　　　　　　THEME
　　　　　(On an interpretation on which the speaker knows that John's interests will be served neither by his going to the lake, nor by his dying.)
　　(viii)　(*PRO$_i$ to get washed), I sent my car$_i$ to the lake.
　　　　　　　　　　　　　　THEME

The binding relation in (ix) - (xi) is licensed only when LIAE converts the PATIENT into a SENSOR.

　　(ix)　That picture (of herself/itself) really struck Mary/the monster.
　　　　　　　　　　　　　　　　　SENSOR
　　(x)　That picture (*of herself/itself) really struck Mary/the monster.
　　　　　　　　　　　　　　　　　PATIENT
　　　　　(On an interpretation on which the picture falls off of a wall and hits Mary/the monster.)
　　(xi)　That picture (*of itself) really struck the rock.
　　　　　　　　　　　　　PATIENT

And the binding relation in (xii) - (xiv) is licensed only when LIAE converts the GOAL into a BENEFICIARY. (See Minkoff 1994 for discussion of examples like (iii) - (viii) and (xii) - (xiv).)

I show how the optional interpretation that produces LIAE is constrained by abstract syntactic principles, so that the distribution of LIAE is not arbitrary, but rather is restricted in principled ways. And I show how these constraints correctly predict, in turn, a parallel set of non-arbitrary restrictions on any verb that selects LIAE, effectively limiting the kinds of selection restrictions, and the combinations thereof, that can be generated by the lexicon.

Taking (1) and (3) as cases in point, syntactic configuration generates the sense of a CAUSER role in the subject position. The application of an optional interpretation to this configuration generates LIAE, producing the additional sense that the CAUSER in question is an AGENT.

Further, the reason that LIAE (and hence the sense of an AGENT role) happens to be obligatory in sentences like (1) in particular is because verbs like "steal" happen, as a matter of lexical idiosyncrasy, to select the optional interpretation by which the LIAE in the subject (and hence the sense of an AGENT) is produced. Moreover, since the theory permits verbs to select optional interpretations, it correctly predicts that the language should have the potential to create verbs like "steal" —i.e. transitive verbs that select LIAE (hence the AGENT role) in their subjects. The theory also predicts, correctly I will argue, that the language should be incapable of creating certain other imaginable verbs —for example, a transitive verb with a meaning like "to deliberately amaze", which would select both LIAE (hence the AGENT role) in its subject, and LIAE (hence the SENSOR role) in its object.

It must be noted here that there exist instances of animacy entailment that are not interpretational, such as those in the subjects of (6a) - (6e).

(6a)   Mary got mad.   (6d)   Mary became happy.
(6b)   Mary became sad.   (6e)   Mary was glad.
(6c)   Mary turned scared.

Of course, the animacy entailment in these subjects is obligatory, as is attested by the unacceptability of the (in my culture) inanimate substitutions in (7a) - (7e).

(7a)   *The volcano got mad.   (7d)   *The lightning became happy.
(7b)   *The rock became sad.   (7e)   *The water was glad.
(7c)   *The screw turned scared.

(xii)   Mary sent a picture (of himself/itself) to   John/the monster.
                                BENEFICIARY
(xiii) Mary sent a clone (*of himself/itself) to John/the monster.
                                GOAL
        (On an interpretation on which the clone volitionally goes to John/the monster, acting, in other words, as a VOLUNTEER —not one on which the clone goes, non-volitionally, into John's/the monster's possession.)
(xiv)   Mary sent a picture (*of itself) to   Guatemala City).
                                GOAL

Examples like these demonstrate that LIAE is crucial to accounting for the licensing of certain dependencies, and therefore that its theoretical status should be considered genuine.

Up to now, (6a-e) may appear similar to (1), above. However, the animacy entailment in (6), unlike that in (1), can never be optionally generated by independent means. To see this point, let us suppose that animacy entailment makes the subjects of (6a-e) into instances of the EXPERIENCER role, since the adjective in each case denotes the subject's psychological state. Now, as far I can tell, there are no sentences syntactically parallel to (6a-e) in which such an EXPERIENCER role is optionally available. There do exist sentences like (8) - (10), which are syntactically parallel[9] to (6a-e) but lack an EXPERIENCER subject.

    (8) Mary turned red.   (9) Mary became tall.   (10) Mary got old.

But in no such sentence is the EXPERIENCER role optionally available. (Note that (8) - (10) would be candidates for such, since they happen to have human NPs in subject position.)

I will claim that, in the subjects of (6a-e) and (8) - (10), the reason there is no optional EXPERIENCER role is because animacy entailment cannot be generated in these positions by applying an interpretation to these sentences' syntactic structures.

In conclusion, then, in some sentences, such as (1), the animacy entailment selected on an argument is lexico-interpretational; in other sentences, such as (6a-e), the animacy entailment selected on an argument is not interpretational ("lexico-" or otherwise).

In Section 3, I use the theory developed in Section 2 to explain facts about the behavior of unergative, location, locatum, "possession", and inchoative verbs, such as those in (11), (12), (13), (14) and (15), respectively.

    (11)   Mary walked.   (12)   Mary shelved the book.

    (13)   Mary saddled the horse.

    (14)   We provisioned those mountain climbers.

    (15a) The gravy thinned.   (15b) The cook thinned the gravy.

I assume following H&K that each of these verbs is derived via incorporation of a lexical item from an underlying "lexical relational structure" (LRS) in which the unincorporated item forms the lowest complement in a corresponding clause containing empty heads.

For example, H&K (1993) derive (12) from the LRS (16).

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(9) I believe that the verbs in (6a-e), (8), (9) and (10), should be considered unaccusatives, but nothing turns on the use of this label. All that is relevant for our purposes is that, at all levels of representation, these verbs have only one argument. (Cf. unergative verbs, discussed in Subsection 3.1.1, which are assumed to have two arguments in their base generated structures.)

(16)   VP1

      NP1   V'1
      Mary

            V1   PP1

                  NP2   P'1
                  the book

                        P1   NP3

                                  |

                                  N3
                                  shelf

Section 3 shows that LIAE is distributed on the arguments of derived verbs in accord with the same principles that constrain its distribution on the arguments of the ordinary (i.e. non-derived) verbs discussed in Section 2: All instances of LIAE are generated, and constrained, on base generated syntax, whether on the LRSs of derived verbs or on the d-structures of non-derived verbs.

The findings of Section 2 entail that the morphology of derived verbs must "remember" LIAE (or the ungenerability thereof), possibly even after the LRS on which the LIAE is generated, and even selected, no longer exists. Hence, at the level of lexical semantics, the relationship between syntax and morphology appears to be richer than has previously been argued.

Finally, this work suggests that there is a certain binary order to much of the thematic-relational realm, because it holds that, for each of a variety of thematic relations established by syntactic structure, there exists an animacy-entailing subcase created by the generation of LIAE: For the CAUSER role there exists the LIAE-induced subcase AGENT; for the PATIENT role, the LIAE-induced subcase SENSOR; for the THEME role, the LIAE-induced subcase VOLUNTEER; and for the GOAL role, the LIAE-induced subcase BENEFICIARY.[10] To the extent that such a "bifurcation" of semantic roles is on the right track, it supports the thrust of this work.

(10) As pointed out in note 8, the animacy at issue in LIAE, i.e. at issue in the creation of the AGENT, SENSOR, VOLUNTEER and BENEFICIARY roles, is of a special kind. To elaborate on this point here, what LIAE seems to involve is that the arguments in question must have certain attributes in order to successfully fulfill their thematic roles. Depending upon whether the thematic role is that of AGENT, SENSOR, VOLUNTEER or BENEFICIARY, the necessary attributes seem to be, roughly, those of intention, sentience, or capacity for ownership. Since these attributes are available only to animate arguments, the resulting roles clearly must be animacy-entailing. However, it also is clear that, given the nature of these attributes, not just any animate argument will suffice.

For example, the subject of (i) must act with intention in order to successfully fulfill the LIAE-induced role of AGENT. Hence, it is, of course, obvious that this argument has to be animate.

(i) Mary   stole my money.
     AGENT

2. Lexico-Interpretational Animacy Entailment Relations in Argument Structure

A priori, one would expect that it should be possible to find verbs of all sorts —transitive, ditransitive, unaccusative, unergative, and so forth— that select LIAE[11] in all sorts of positions. Curiously, however, there appear to be certain "holes" in this paradigm.

2.1. Simple transitive constructions

To begin with, simple transitive verbs may either select LIAE in the subject as in (1), repeated below as (17a), and in (18a), or in the object as in (19a) and (20a); however, apparently no transitive verb can select LIAE in both of these positions simultaneously. (Note that, in this work, the terms "transitive" and "simple transitive" will refer only to verbs having two arguments —never to ditransitives.)

(17a)   Mary stole the money.   (17b)   *The wind stole the money.

(18a)   Mary found the iron filings.   (18b)   *The magnet found the iron filings.

However, as (ii) makes clear, an animate argument incapable of intention will not suffice.

(ii)   *The bamboo stole my money.
        AGENT

Similarly, the object of (iii) must be sentient in order to successfully fulfill the LIAE-induced role of SENSOR. Hence, here also it is obvious that this argument must be animate.

(iii)   That actor really amazed   her audience.
                                   SENSOR

However, as (iv) makes clear, an animate argument incapable of sentience will not suffice.

(iv)   *That actor really amazed the trees.
                                   SENSOR

Finally, the direct and indirect objects of (v) and (vi) must be, respectively, sentient and capable of ownership in order to successfully fulfill the LIAE-induced roles of SENSOR and BENEFICIARY. Hence, once again it is obvious that these arguments must be animate.

(v)   Mary ordered   the dog   into the street.   (vi)   Mary sold a painting to   Jane
                      VOLUNTEER   BENEFICIARY

However, as (vii) and (viii) make clear, animate arguments incapable, respectively, of sentience or ownership will not suffice.

(vii)   *Mary ordered the tree   into the street.   (viii) *Mary sold a painting to   the dog.
                       VOLUNTEER   BENEFICIARY

Thus, while it is clear that LIAE implicates animacy, it also is clear that the reason that it does so is because it implicates certain specific attributes which are found only on the members of certain proper subsets of the animate NPs.

(11) It may seem awkward to speak of verbs selecting "lexico-interpretational animacy entailment" instead of merely "lexico-interpretational animacy." However, the current wording is necessary since, as noted in the text, what is important about the verbs in question is not that they select animacy per se but, rather, that they select a semantic interpretation that happens to entail animacy in the arguments in question.

    (19a)   That story impressed John.   (19b) *That story impressed the computer.

    (20a)   That story annoyed John.   (20b) *That story annoyed the computer.

On the one hand, as is demonstrated by the unacceptability of (17b) (= 2) and (18b), the verbs in (17a) and (18a) select animacy entailment in their subjects (giving the sense of an AGENT role). As shown by the discussion of example (3) in the Introduction, this animacy entailment is generated by interpretation, and hence represents an instance of LIAE. I want to note here that, among (3), (17a) and (18a), the AGENT role induced by LIAE is on an argument that would otherwise be discerned only as a CAUSER.

On the other hand, as is demonstrated by the unacceptability of (19b) and (20b), the verbs in (19a) and (20a) select animacy entailment in their objects. I claim that the animacy entailment selected here is responsible for producing a "SENSOR" role in this position, where by "sensor" I mean a PATIENT that is affected emotionally.[12] By reasoning parallel to that employed in discussion of the AGENT, sentences like (21) - (24) demonstrate that (19a) and (20a)'s animacy entailment, and hence the sense of a SENSOR role, is interpretational.

    (21)   That story agitated John.   (22)   The earthquake agitated the wine.

    (23)   That story devastated John.

    (24)   The earthquake devastated the building.

(21) - (24) presumably are syntactically identical to (19a) and (20a), yet here animacy entailment, and hence the SENSOR role, is optional. Therefore, it is clear, transitive verbs like those in (19a) and (20a) select LIAE in their objects. I want to note here that, among (21) - (24), the SENSOR role is induced by LIAE on an argument that would otherwise be discerned only as a PATIENT.

Finally, it apparently is impossible for any transitive verb to select LIAE in both its subject and object arguments simultaneously. In other words, in thematic relational terms, there do not seem to exist any transitive verbs that require both an AGENT role in the subject and a SENSOR role in the object.[13] I return to this point in Subsection 2.4.

2.2. Unaccusatives

In contrast with the behavior of simple transitives, there do not appear to exist any unaccusative verbs that select LIAE arguments. This is illustrated by the examples in (25) - (26).[14, 15]

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    (12) I consider an argument to have a SENSOR role just if it is the PATIENT of a (non-ditransitive) verb whose impact is emotional, rather than physical. Thus, for example, while the object of (22) is a PATIENT, the object of (21) is both a PATIENT and a SENSOR.

    Note that I distinguish a SENSOR from an EXPERIENCER. For me, the latter term refers to a THEME that happens to be the subject of a psychological predicate, as is the case with the THEMES (hence, EXPERIENCERS) in (6) (=80) and, at the level of lexical relational structure, in (70), (71), (81a) and (82a).

    (13) An example of such a verb, if it existed, would be one which (necessarily) meant "to deliberately amaze."

    (14) I believe that the verbs in (26) should be considered unaccusatives. See note 9.

    (15) Of course, the adjectives in (26c-d) do select animacy entailment in the subjects. However, as discussed in the Introduction, this animacy entailment is not LIAE.

(25a) The package arrived.   (25b) The rains came.
(25c) The clouds descended.   (25d) The sun went down in the west.
(25e) The ship sank.   (25f) The sun rose.
(25g) The ball rolled.   (25h) The stellae remained in Central America.
(25i) The glass broke.   (25j) The ball rolled.
(25k) The ball bounced.   (25l) The potatoes cooked slowly.
(26a) The sky grew dark.   (26b) The light turned red.
(26c) Mary got mad.   (26d) John got sick.

I assume that this gap is not accidental, but should be explained by linguistic theory.

2.3. The Lexico-Interpretational Animacy Entailment Constraint

I argue that restrictions on the distribution of (selection of) LIAE are due to the effect of (27), where "argument" is defined as in (28).

(27)   Lexico-Interpretational Animacy Entailment Constraint (LIAEC): A lexical interpretation can generate animacy entailment in an argument X if and only if

(a) X and some argument Y are arguments of the same verbal head; and

(b) No lexical interpretation generates animacy entailment in Y.

(28)   Given heads in the configuration $[\ a_1\ ...\ a_j\ ]$, where each a_i asymmetrically c-commands a_{i+1} and no element intervenes[16] between a_i and a_{i+1}:
The specifier of a_1 and the non-predicate[17] complement of a_j are <u>arguments</u> of each head a_i.[18]

The intuitive point of (28) is that an item is an argument of a head just if it is the local specifier or complement argument relative to that head.

Seen in this light, (27) claims that LIAE can be generated in an argument only if that argument happens both to be the argument of a verbal head, and to have a coargument in which LIAE is not generated. The remainder of this section shows how (27) correctly predicts the distribution of LIAE.

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(16) I assume that a constituent X *intervenes* between two constituents Y and Z if and only if Y asymmetrically c-commands X, and X asymmetrically c-commands Z.

(17) This wording ensures that predicates cannot be arguments. So, for example, since the adjective in (i) is a predicate, it is a complement, but not an argument, of the verbal head:

(i) The sky got dark.

This result guarantees that the subjects of verbs like those in (i) are the sole arguments of their verbal heads, and hence cannot serve as sites for the generation of LIAE.

(18) This notion of argumenthood is closely related to the notion of "coargument" formulated in Minkoff (1994).

2.4. Simple transitives again

(27) correctly predicts the permissibility of transitive verbs like those considered in Subsection 2.1, some of which are like (17a) and (18a), selecting LIAE in their subjects, and others of which are like (19a) and (20a), selecting LIAE in their objects. (27) also predicts, apparently correctly, the impermissibility (noted in Subsection 2.1) of any transitive verb that would select LIAE in both its subject and object simultaneously.

In cases like (17a) and (18a), both the subject and object are arguments of the verbal head; hence, the subject satisfies clause (a) of the LIAEC. Furthermore, no lexical interpretation happens to assign animacy entailment to the direct object —in other words, LIAE is not generated in this position. Hence, the subject also satisfies clause (b) of the LIAEC. Therefore, (27) predicts that LIAE can be generated in the subject in cases like (17a) and (18a).

In addition, I propose that verbs can select optional interpretations as a matter of lexical idiosyncrasy. Given this, it follows not only that LIAE is generable in the subjects of verbs like those in (17a) and (18a), but also that LIAE is selectable in such positions. In other words, the theory now correctly predicts that the language should have the potential to create verbs like "steal" and "find" —i.e. transitive verbs that select LIAE (hence the AGENT role) in their subjects.

Next, in cases like (19a) and (20a), both the subject and object are arguments of the verbal head; hence, the object satisfies clause (a) of the LIAEC. Furthermore, here, in contrast to cases like (17a) and (18a), no lexical interpretation happens to assign animacy entailment to the subject —in other words, LIAE is not generated in this position. Hence, the object also satisfies clause (b) of the LIAEC. Therefore, (27) predicts that LIAE can be generated in the object in cases like (19a) and (20a).

Moreover, since verbs can select optional interpretations as a matter of lexical idiosyncrasy, it follows not only that LIAE is generable in the objects of verbs like those in (19a) and (20a), but also that LIAE is selectable in such positions. In other words, the theory correctly predicts that the language should have the potential to create verbs like "impress" and "annoy"—i.e. transitive verbs that select LIAE (hence the SENSOR role) in their objects.

Finally, in any simple transitive clause, the subject and object necessarily are arguments of the same verbal head: Therefore, whenever LIAE is generated in either one of these arguments, it will be impossible for the other to satisfy clause (b) of the LIAEC. Thus, (27) predicts that no interpretation of a simple transitive can ever generate LIAE in both the subject and object arguments.

Moreover, on the assumption that the selection of AGENT and SENSOR roles proceeds only via the selection of LIAE, it follows that these roles cannot be selected simultaneously in their respective subject and object positions. In other words, the theory predicts, evidently correctly, that the language should be incapable of creating verbs with meanings like "to deliberately impress" or "to deliberately annoy" —i.e., transitive verbs that would select both LIAE (hence the AGENT role) in their subjects, and LIAE (hence the SENSOR role) in their objects.

2.5. Ditransitive constructions

Ditransitive verbs may select LIAE in their subjects as in (29) and (30), in their direct objects as in (29), or in their oblique objects as in (30);[19] however, apparently no ditransitive verb can select LIAE in both the direct and oblique object positions simultaneously.

(29a) Mary invited John to that party.
(29b) *Mary invited a large chocolate cake to that party.
(29c) *A large chocolate cake invited John to that party.

(30a) Mary sold a painting to John.
(30b) *Mary sold a painting to the wall.
(30c) *The cash register sold a painting to John.

Each of these aspects of ditransitive behavior is predicted by (27), on the assumption that such verbs are associated with Larsonian structures so that, for example, (29a) and (30a) have roughly the d-structures shown in (31a) and (31b), respectively (cf. Larson 1988, Kayne 1984).

(31a)

```
              VP1
            /      \
        NP1          V'
        Mary        /    \
                  V1       VP2
                invited   /     \
                       NP2        V'
                       John      /    \
                               V2       PP
                                       /    \
                                      P       NP3
                                      to     that party
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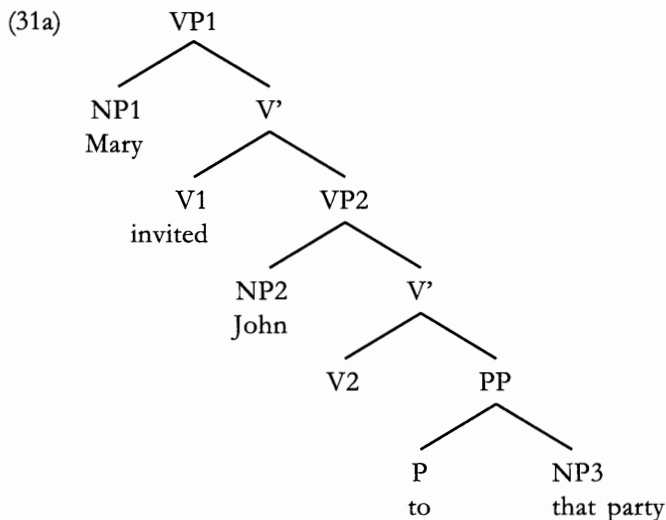
(19) I don't know whether any ditransitive verb can select LIAE on its oblique object without simultaneously selecting LIAE on its subject. There do seem to be verbs that select LIAE on their direct objects only, as in (i).

(i) An appetite for seafood coaxed the kitten out of the tree.

(31b)   VP1
            /   \
          NP1   V'
          Mary   /   \
                V1   VP2
               sold   /   \
                    NP2   V'
                  a painting /   \
                           V2   PP
                                  /   \
                                 P   NP3
                                 to   John
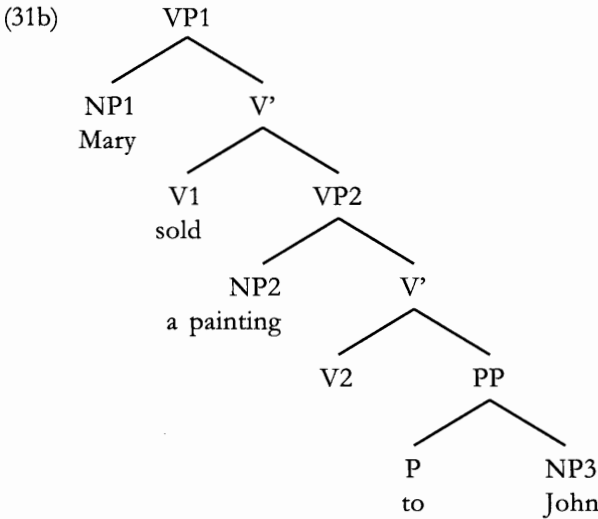
First, (31a) and (31b) show instances in which a ditransitive verb selects animacy entailment, producing the sense of an AGENT role, in its subject. By reasoning parallel to that employed in discussion of the AGENT subject of (17a) (= 1) and (18a), sentences like (32a-b) demonstrate that the animacy entailment in (31a-b), and hence the sense of an AGENT role, is interpretational—in other words, it is an instance of LIAE: (32a-b) presumably are syntactically identical to (31a-b), yet here the animacy entailment in the subject (and hence the sense of an AGENT role) is optional.[20]

(32a)   Mary sent John to the doctor's office.
(32b)   Rumours about a strange new disease sent John to the doctor's office.

Also note that, in (32a-b), LIAE induces the sense of the AGENT role on an argument that would otherwise be discerned only as a CAUSER.

That ditransitive verbs should be able to select LIAE in their subjects is predicted by the application of (27) to the structures in question, i.e. to (31a-b) in the case in point. Here, both the subject, NP1, and the lower verb phrase, VP2, are arguments of the head V1;[21] hence, the subject satisfies clause (a) of the LIAEC. Furthermore, as is obvious, no lexical interpretation assigns animacy entailment to VP2 —in other words,

(20) Note that animacy entailment (agency) is optional even in the case of (32a). For instance, this example could mean that the phenomenon of Mary, and not her agency, is what sent John to the doctor's office, e.g. that John went to the doctor's office as a result of his worries about Mary.

(21) The conclusion that VP2 is an argument of V1, also adopted in Minkoff (1994), follows from the definition in (28) in the text. Also, I believe this conclusion makes intuitive sense. I assume that the semantic content of VP2 amounts to a proposition with an abstract verbal head. So for example, in 31b, VP2 means, in part, "a painting GOES to John." Further, this proposition (= VP2) itself forms the object of the higher verbal head. And the semantic content of the higher verbal head amounts to an abstract causal verb. This has the desired result of making the subject of VP1 the CAUSER of the proposition of VP2. Thus, VP1 means, in part, "Mary CAUSES [a painting TO GO to John]." I believe that analyzing VP2 as the object of V1 follows naturally from the semantic analysis of lexical syntax proposed in H&K 1991a.

LIAE is not generated on the lower VP. Therefore, the subject also satisfies clause (b) of the LIAEC. Thus, (27) predicts that LIAE can be generated in the subject.

Moreover, since verbs can select optional interpretations as a matter of lexical idiosyncrasy, it follows not only that LIAE is generable in the subjects of verbs like those in (31a-b), but also that LIAE is selectable in such positions. In other words, the theory correctly predicts that the language should have the potential to create verbs like "invite" and "sell" —i.e. ditransitive verbs that select LIAE (hence the AGENT role) in their subjects.

Also, the contrast between (29a) (= 31a) and (29b) shows that, in (29a) in particular, the ditransitive verb selects animacy entailment in its direct object. Here, animacy entailment produces the sense that the subject believes that the direct object's interests could be (seen to be) served by the latter's going to the oblique object. Following the spirit of Minkoff (1994), I assume that this belief concerning the direct object's interests defines the latter argument as a "VOLUNTEER."[22]

By reasoning parallel to that employed above, sentences like (33a-b) demonstrate that (29a)'s animacy entailment, and therefore the sense of a VOLUNTEER role, is interpretational —in other words, it is an instance of LIAE: (33a-b) presumably are syntactically identical to (29a), yet here the animacy entailment in the direct object, and therefore the sense of a VOLUNTEER role, is optional. Thus, to reiterate, ditransitive verbs like that in (29) select LIAE in their direct objects.

> (33a) The tour guide sent those visitors to the best restaurant in town.
>
> (33b) Mary sent a letter to the best restaurant in town.

Also note that, in (33a-b), LIAE induces the sense of the VOLUNTEER role on an argument that would otherwise be discerned only as a THEME.

That ditransitive verbs should be able to select LIAE in their direct objects is predicted by the application of (27) to (29a) (= 31a). Both the direct object, NP2,

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(22) In Minkoff (1994), a "VOLUNTEER" is defined as any THEME that is understood to go volitionally to the GOAL. However, I believe this notion is in need of refinement. For example, in (29a) (=31a), the verb *invite* does not actually specify whether its direct object goes volitionally to the GOAL; indeed, it does not specify whether its direct object in fact goes anywhere at all. Moreover, the same point can be made with respect to the verb *send* in (33a), discussed below in the text. Here, even given the relevant interpretation, *send* does not specify whether its direct object goes volitionally to the GOAL; like *invite*, it does not specify whether its direct object goes anywhere at all. For example, (33a) could describe a situation in which the tour guide sends the visitors to the restaurant in question, but they end up deciding not to go there. (Lest one think that the direct object would fail to be a VOLUNTEER on such a reading, note that, on the reading in question, the sentence still satisfies the diagnostic for the generability of VOLUNTEER-hood developed in Minkoff (1994), namely that control is licensed between the argument in question and the subject of an added fronted infinitival clause as in "PRO$_i$ to get a good meal, the tour guide sent those visitors$_i$ to the best restaurant in town.")

I suspect that a "VOLUNTEER" should be defined roughly as in (i).

> (i) A THEME "X" of a verb "Y" is a <u>VOLUNTEER</u> if and only if, on the relevant interpretation of the sentence in question, the argument responsible for causing the activity denoted by Y believes that X's interests could be (seen to be) served by X going to the GOAL of Y.

Now the objects of verbs like *invite* and *send* will satisfy the definition of VOLUNTEER even when they don't go anywhere at all. For example, the direct objects *John* and *those visitors* will be VOLUNTEERS even if they don't go anywhere in (29a) and (33a), since these sentences entail (given the relevant interpretation of (33a)) that the subjects *Mary* and *the tour guide* believe that John's and those visitors' interests could be (seen to be) served by their going to the party and to the restaurant, respectively.

and the oblique object, NP3, are arguments of the head V2; hence, the direct object satisfies clause (a) of the LIAEC. Furthermore, no lexical interpretation assigns animacy entailment to NP3—in other words, LIAE is not generated in the oblique object. Therefore, the direct object also satisfies clause (b) of the LIAEC. Thus, (27) predicts that LIAE can be generated in the direct object.

Moreover, since verbs can select optional interpretations as a matter of lexical idiosyncrasy, it follows not only that LIAE is generable in the direct objects of verbs like those in (29a), but also that LIAE is selectable in such positions. In other words, the theory correctly predicts that the language should have the potential to create verbs like *invite* —i.e. ditransitive verbs that select LIAE (hence the VOLUNTEER role) in their direct objects.

On the other hand, the contrast between (30a) (= 31b) and (30b) shows that, in (30a) in particular, the ditransitive verb selects animacy entailment in its oblique object. Here, animacy entailment produces the sense that the subject believes that the oblique object could (be seen to) acquire some power over the direct object by receiving it. Following the spirit of Minkoff (1994), I assume that this belief concerning the oblique object's acquisition of power defines the latter argument as a BENEFICIARY.[23]

(23) In Minkoff (1994), a "BENEFICIARY" is defined, roughly, as any GOAL that the THEME is understood to be *for*, in the sense that the GOAL acquires some power over the THEME. (For example, *John* would be a BENEFICIARY in (30a), since one understands that "the painting" is *for* him, in the sense that he acquires some power over it.) However, I believe this notion is in need of refinements similar to those made for the case of the VOLUNTEER. For example, in (i), below, the verb *bequeath* does not actually specify whether its oblique object, a BENEFICIARY, acquires any power over the THEME; indeed, it does not specify whether its oblique object in fact receives the THEME at all.

(i) Jane bequeathed her car to Sarah.

Moreover, the same point can be made with respect to the verb *send* in (34a), discussed below in the text. Here, even given the relevant interpretation, *send* does not specify whether its oblique object acquires any power over the THEME; like *bequeath*, it does not specify whether its oblique object in fact receives the THEME at all. For example, (34a) could describe a situation in which Mary sends money to Sue but, due to a postal strike, Sue never actually receives it. (Lest one think that the oblique object would fail to be a BENEFICIARY on such a reading, note that, on the reading in question, the sentence still satisfies the diagnostic for the generability of BENEFICIARY-hood developed in Minkoff (1994), namely that control is licensed between the argument in question and the subject of an added infinitival clause as in "Mary sent money$_i$ to Sue$_j$ PRO$_j$ to spend t$_i$ on her kids.")

I suspect that a "BENEFICIARY" should be defined roughly as in (ii).

(ii) A GOAL "X" of a verb "Y" is a BENEFICIARY if and only if, on the relevant interpretation of the sentence in question, the argument responsible for causing the activity denoted by Y believes that X could (be seen to) acquire some power over the THEME of Y by receiving it.

Now the oblique objects of verbs like *bequeath* and *send* will satisfy the definition of BENEFICIARY even when they don't receive the THEME at all. For example, the oblique objects *Sarah* and *Sue* will be BENEFICIARIES even if they don't receive the THEMES in (i) and (34a), since these sentences entail (given the relevant interpretation of (34a)) that the subjects, *Jane* and *Mary*, believe that Sarah and Sue could (be seen to) acquire, respectively, some power over *Jane's car* and *the money* by receiving them.

Note, finally, that my definition of "BENEFICIARY" differs from that used elsewhere in the literature. For example, not all arguments that benefit from the event in which they participate will be BENEFICIARIES in my sense. A case in point would be the direct object in the matrix clause of (iii), which is not a BENEFICIARY for me, even though it apparently would (be seen to) benefit from the activity in question.

(iii) Mary sent John to Rhode Island to have the time of his life.

By reasoning now familiar, sentences like (34a-b) demonstrate that (30a)'s animacy entailment, and therefore the sense of a BENEFICIARY role, is inter-pretational—in other words, it is an instance of LIAE: (34a-b) presumably are syntactically identical to (30a), yet here the BENEFICIARY role in the oblique object, and therefore the animacy entailment, is optional. Thus, to reiterate, ditransitive verbs like those in (30a) select LIAE in their oblique objects.

(34a)   Mary sent money to Sue.   (34b)   Mary sent money to Ocosingo.

Also note that, in (34a-b), LIAE induces the sense of the BENEFICIARY role on an argument that would otherwise be discerned only as a GOAL.

That ditransitive verbs should be able to select LIAE in their oblique objects is predicted by the application of (27) to (30a) (= 31b). Both the direct object, NP2, and the oblique object, NP3, are arguments of the head V2; hence, the oblique object satisfies clause (a) of the LIAEC. Furthermore, no lexical interpretation assigns animacy entailment to NP2—in other words, LIAE is not generated in the direct object. Therefore, the oblique object also satisfies clause (b) of the LIAEC. Thus, (27) predicts that LIAE can be generated in the oblique object.

Moreover, since verbs can select optional interpretations as a matter of lexical idiosyncrasy, it follows not only that LIAE is generable in the oblique objects of verbs like those in (30a), but also that LIAE is selectable in such positions. In other words, the theory correctly predicts that the language should have the potential to create verbs like "sell"—i.e. ditransitive verbs that select LIAE (hence the BENEFI-CIARY role) in their oblique objects.

Finally, it apparently is impossible for any ditransitive to select LIAE in both its direct and oblique object arguments simultaneously. In other words, in thematic relational terms, there do not seem to exist any ditransitive verbs that require both a VOLUNTEER role in the (underlying) direct object and a BENEFICIARY role in the oblique object.[24]

The absence of such verbs is predicted by (27). In any ditransitive clause, the direct and oblique objects necessarily are arguments of the same verbal head; in other words, in (31a-b) for example, NP2 and NP3 both are arguments of V2. Whenever LIAE is generated in either one of these arguments, it will be impossible for the other to satisfy clause (b) of the LIAEC. Thus, no interpretation can ever generate LIAE in both the direct and oblique objects simultaneously.

Furthermore, not all arguments that are BENEFICIARIES in my sense would be believed to (be seen to) benefit from the power they acquire over the THEME. A case in point would be the oblique object in the matrix clause of (iv), which is a BENEFICIARY for me, even though it most likely would not be believed to (be seen to) benefit from the power in question.

(iv)   Mary gave her car to the mechanic to fix.

(One might point out here that the mechanic is likely to be paid for fixing the car; however, notice that she will remain a BENEFICIARY even if one assumes that she is a slave, who will in no way gain from her efforts.)

(24) Note that no such restriction holds between the subject and direct object, nor between the subject and oblique object. The existence of (29a) demonstrates the former, and the existence of (30a) demonstrates the latter.

Moreover, assuming that the selection of VOLUNTEER and BENEFICIARY roles proceeds only via the selection of LIAE, it follows that these roles cannot be selected simultaneously in their respective direct and oblique object positions. In other words, the theory predicts, evidently correctly, that the language should be incapable of creating verbs with meanings like "to act so as to cause (someone) to presumably go, for the sake of her/his own apparent interests, into the possession of, and hence into being under the power of, another"—i.e., intransitive verbs that would select both LIAE (hence the VOLUNTEER role) in their direct objects, and LIAE (hence the BENEFICIARY role) in their indirect objects.[25, 26]

(25) Note that certain verbs, such as that in (i), are quite naturally used in contexts that might create the appearance that LIAE is generated on both the direct and oblique objects.

(i) I'll introduce you to the host.

However, the point is that "introduce" does not in fact select LIAE in both of these positions, as is made clear by the acceptability of (ii), whose oblique object is inanimate.

(ii) I'll introduce you to linguistics.

I argue that there is no lexical interpretation that will generate LIAE on both of these arguments, and hence it would be impossible for "introduce" to select LIAE in both.

(26) An anonymous reviewer has raised the question of whether the behavior of the Spanish verb *presentar*, which has a meaning similar to that of English *introduce*, might pose a problem for the claims made here. Unlike *introduce*, *presentar* cannot be used with an inanimate oblique/indirect object, as is clear from the contrast in (iii.a-b).

(iii.a) A María   le   present-é   a   Juan.
         to Mary(OBL.OBJ) 3S.CL   introduce-1S.PST to   John(D.OBJ)
         "I introduced/presented John to Mary."

(iii.b) *A la lingüística   (le)   present-é   a   Juan.
         to linguistics(OBL.OBJ) 3S.CL   introduce-1S.PST to   John(D.OBJ)
         "I introduced/presented John to linguistics."

However, I don't see that *presentar* poses any difficulty. First of all, given that the direct object, *John*, is the object of a preposition, I should think that the LIAE would permit the generation of LIAE simultaneously on both the direct and oblique objects. (Although, obviously, one cannot be certain of this in the absence of proposed structures for sentences involving "presentar").

Second, when the structure in question is made to resemble more closely those for which the LIAE would block (simultaneous) LIAE, *presentar* freely accepts an inanimate direct object, as in (iv).

(iv) A María   le   present-é   mi   trabajo
      to Mary(OBL.OBJ) 3SG.CL   introduce-1SG.PAST my   work(D.OBJ)
      "I presented my work to Mary."

Thus, there would seem to be no way that this verb could pose any counterexample to the claims made in this work.

Also, the reviewer asks whether problems are presented by sentences like (v), in which, s/he suggests, the subject is an obligatory AGENT and both the direct and oblique objects appear to be obligatory VOLUNTEERS.

(v) The judge married Pat to Chris.

However, again, this does not strike me as a genuine problem. Although one hopes that anyone who performs a marriage believes that the action could (be seen to) serve the interests of those who are entering the married state, the verb *to marry* does not seem to incorporate such a requirement into its meaning. As far as I can tell, (v) (cf. note 22) might perfectly well describe a situation in which the judge marries Pat to Chris knowing that, as a result of their union, they will only come to harm. So, although *to marry* does require animacy in both its internal arguments, this animacy does not appear to represent an instance of LIAE. (Note that I am assuming here that there does not exist any sentence parallel to (v) whose internal arguments are optionally assigned any thematic roles one might imagine as being selected on the internal arguments of (v) —e.g. try arguing in terms of "SPOUSE-BECOMER" roles, if you like.)

2.6. Unaccusatives again

(27) predicts, apparently correctly, the impermissibility of any unaccusative verb that would select LIAE. The surface subject of an unaccusative verb[27] is that verb's sole argument and therefore, obviously, it cannot be the case that the subject and some other argument are arguments of the same verbal head. Hence, there is no way that the subject can satisfy clause (a) of the LIAEC. Thus, (27) predicts that no interpretation can ever generate LIAE in the argument of an unaccusative verb.

Moreover, assuming that the selection of the VOLUNTEER role proceeds only via the selection of LIAE, it follows that no unaccusative verb can select this role. In other words, the theory predicts, evidently correctly, that the language should be incapable of creating unaccusative verbs with meanings like "to (act so as to cause oneself to) arrive, for the sake of one's own apparent interests"[28] —i.e., unaccusative verbs that would select LIAE (hence the VOLUNTEER role) in their subjects.[29]

2.7. Conclusion of Section 1

This section has shown that the distribution pattern of LIAE, and hence also of the possibility of LIAE selection, is predicted by the LIAEC, (27), which generates LIAE as an optional interpretation on certain syntactic configurations.[30]

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(27) Assuming the unaccusative hypothesis (Burzio 1986, Perlmutter 1978), the subject of an unaccusative is an underlying direct object. Given the structures adopted in the current work (employing binary branching after the spirit of Larson 1988, Kayne 1984), this amounts to saying that the subject of an unaccusative, like the object of a ditransitive, is the subject of the lowest VP in the clause in question.

(28) The wording may seem obscure here, but it is forced by one's having adopted a definition of VOLUNTEER that can handle the transitive cases. A simpler description of an example of an unaccusative verb prohibited by the theory would be one that meant "to intentionally arrive."

(29) This point apparently cannot be made with respect to the AGENT, SENSOR or BENEFICIARY roles since, as far as I can tell, these roles arise from the generation of LIAE on arguments having, respectively, a CAUSER, PATIENT, or GOAL role; none of these latter roles ever arises in the argument of an unaccusative verb.

(30) An anonymous reviewer has suggested that this work would benefit from a discussion of the advantages of using the notion of animacy entailment as opposed to other conceivable competitors: For example, one might appeal to Jackendoff's notion "actor," and ask whether arguments on which animacy entailment is generated might just be "non-actor animates," i.e. "animate... [arguments] which are not merely actors." (Note: Following Jackendoff 1990, X is an actor in the sentence "X 'verb'-ed (Y)" just if it follows here that "what X did was 'verb' (Y)." So, for example, *Mary* is an actor in "Mary built the house" since it follows here that "what Mary did was build the house.")

I respond to the specific suggestion first. An appeal to the notion of "animates which are not merely actors," depending upon how this notion is interpreted, either would be superfluous, or else would prevent the theory from constraining the generation of all of the LIAE-induced roles of AGENT, SENSOR, VOLUNTEER, and BENEFICIARY.

Presumably, the LIAEC would be reformulated along the lines given in (i) (retaining the definition of "argument" given in the text).

    (i)   Lexico-Interpretational Animacy-which-is-not-mere-Actorhood
           Constraint (LIAAC): A lexical interpretation can make an (animate) argument X into an animate argument that is not merely an actor if and only if

           (a) X and some argument Y are arguments of the same verbal head; and

           (b) no lexical interpretation makes Y into an animate argument that is not merely an actor.

There is an ambiguity as to how to interpret the phrase "animate argument that is not merely an actor." Suppose this refers to any argument that has both an actor role and some other role in addition. In this case, the notion in

3. Derived Verbs

This section uses the theory developed in Section 1 to explain facts about the behavior of derived verbs such as those in (35) - (39).

(35)   Mary walked.   (36)   Mary shelved the book.

---

question would compromise the empirical coverage of the theory, because it would block the LIAAC (formerly LIAEC) from applying to the objects of simple transitive verbs, and to the direct and oblique objects of ditransitive verbs.

Given a simple transitive with an AGENT subject, the LIAAC would fail to block the creation of a SENSOR role in the object. This failure would arise since the LIAAC could only limit the interpretation of arguments that happened to be actors: Since the object argument would never be an actor, the LIAAC would have nothing to say about it. So, for example, the LIAAC would fail to predict the impossibility of ever finding any verb that would select both an AGENT subject and a SENSOR object —for example, a verb that would (obligatorily) have the meaning "to deliberately amaze."

Further, given a ditransitive with a VOLUNTEER direct object, the LIAAC would fail to block the creation of a BENEFICIARY in the oblique object; and given a ditransitive with a BENEFICIARY oblique object, it would fail to block the creation of a VOLUNTEER in the direct object. Again, these failures would follow because the LIAAC could only limit the interpretation of arguments that happened to be actors: Since the direct and oblique objects would never be actors, the LIAAC would have no impact on them. So, for example, the LIAAC would fail to predict the impossibility of ever finding any verb that would select both a VOLUNTEER direct object and a BENEFICIARY oblique object —for example, a verb that would have the meaning "to act so as to cause someone <VOLUNTEER> to presumably go, for the sake of her/his own apparent interests, into the possession of, and hence into being under the power of, another <BENEFICIARY>."

The above considerations argue strongly against the notion that arguments on which animacy entailment is generated could just be "animate arguments which are not merely actors," if these latter are understood to be just those animate arguments that have both an actor role and some other role in addition.

On the other hand, "animate arguments which are not merely actors" could be taken to refer to all those animate arguments whose thematic roles contain any semantic element distinct from that of actorhood, regardless of whether they might happen to include actorhood as well. On this interpretation, the theory's empirical coverage would be restored. For example, given a simple transitive with an AGENT subject, the subject's thematic role would contain a semantic element distinct from that of actorhood (namely the element of intention on the subject's part), and so now the LIAAC would block the generation of a SENSOR role in the object since, clearly, the SENSOR role also contains a semantic element distinct from that of actorhood. Similar remarks apply with respect to the behavior of the direct and indirect objects of ditransitive verbs, as I leave it to the reader to verify.

However, now the reference to any notion based on Jackendoff's "ACTOR," or indeed to any previous semantic theory that I know of, is made superfluous. This is so because, as the reader may have noted, the theory proposed in the current work apparently would yield the right results even if the LIAAC were broadened to the point of applying to all lexico-interpretational aspects of all semantic roles in general. In other words, as far as I can tell, no empirical coverage would be lost by (re-)formulating the LIAEC along the lines shown in (ii) (leaving "aspect of a semantic role" as a purely intuitive notion for current purposes, and again retaining the definition of "argument" from the text).

(ii)   Lexico-Interpretational Constraint (LIC): A lexical interpretation can generate an aspect of a semantic role in an argument X if and only if

(a)   X and some argument Y are arguments of the same verbal head; and
(b)   no lexical interpretation generates an aspect of a semantic role in Y.

Here, given a simple transitive with an AGENT subject, it will be the case that a lexical interpretation generates an aspect of the subject's thematic role (again, the element of intention on the subject's part). Therefore, the LIC will block any SENSOR role in the object, since the creation of such a role would require that a lexical interpretation generate, on the object, an aspect of a semantic role. Similar remarks apply with respect to the behavior of the direct and indirect objects of ditransitive verbs, as I leave it to the reader to verify.

The point here is that, since all of the animacy-entailing roles —AGENT, SENSOR, VOLUNTEER and BENEFICIARY— result from the application of a lexical interpretation, it is possible to constrain these roles' generation by constraining the generation just of lexico-interpretational roles, abandoning all reference to animacy entailment, non-mere-actorhood, or to any other aspect of these roles' semantic character. Therefore, returning once again to the reviewer's suggestion, any reference to "animate arguments which are not merely actors" —where this is taken to mean all those animate arguments whose thematic roles contain any semantic element distinct from that of

(37)   Mary saddled the horse.

(38)   We provisioned those mountain climbers.

(39a) The gravy thinned.   (39b) The cook thinned the gravy.

I assume following H&K that each of these verbs is derived via incorporation of a lexical item from an underlying structure in which the unincorporated item forms the lowest complement in a corresponding clause containing empty heads. For example, H&K (1993) derive (36) from the underlying structure (40).

(40)

```
                    VP1
                   /    \
                 NP1     V'1
                Mary    /    \
                       V1     PP1
                             /    \
                          NP2      P'1
                        the book  /    \
                                 P1     NP3
                                        |
                                        N3
                                       shelf
```

---

actorhood— clearly is superfluous: Of course the proposal would work, but only because any proposal will work as long as it permits the LIAEC to constrain the generation of lexico-interpretational (aspects of) thematic roles.

I believe that the above discussion demonstrates that any potential appeal to the notion of "non-mere-actorhood" is superfluous at best, and deleterious at worst.

Moving now to the broader question of the advantages of using the notion of animacy entailment as opposed to any other possible competitor, I believe that the above discussion demonstrates that replacing the notion of animacy entailment with any potential "competitor" semantic notion always will be superfluous in the best case: Once we know that (an aspect of) a thematic role is lexico-interpretational, nothing more needs to be said.

However, this now raises an obvious question: Isn't the notion of animacy entailment, incorporated into the theory developed in this work, also superfluous? I believe the answer to this question is Yes and No.

On the one hand, the LIAEC's reference to animacy entailment is superfluous and hence could be eliminated since, as already demonstrated, the LIC given in (ii) handles all the facts without making use of this notion.

On the other hand, however, all of the roles that the LI(AE)C seeks to constrain are, in fact, animacy entailing. Indeed, I believe that all roles that result from the application of any lexical interpretation are animacy entailing. In other words, animacy entailment seems to enjoy a privileged relationship to lexical interpretation —a relationship which is not enjoyed by "non-mere-actorhood," nor by any other semantic notion with which I am familiar. Thus, it seems that animacy entailment does need to be mentioned somewhere, so that the theory will predict options for the generation of animacy-entailing roles rather than options for the generation of some other kind of role, say for those that directly relate to changes of state or some such. In other words, then, the reference to animacy entailment could well be eliminated from the LIAEC, leaving us with a constraint along the lines of the LIC given in (ii), but only at the cost of adding to the theory some statement along the lines of (iii).

(iii) If (some aspect of) a thematic role X is produced by the application a lexical interpretation, X entails animacy.

I leave the LIAEC as written in the text, but I suspect that the treatment I propose in this footnote is conceptually, though not empirically, superior.

First, the nominal argument *shelf* incorporates (via head-to-head movement, in accordance with the Head Movement Constraint, Travis 1984) into its governing sister, the local head P1, along the lines shown in (41).[31] H&K (1994) (see also Hale & Keyser this volume) argue that this incorporation is driven by the principle of Full Interpretation, requiring that an empty lexical head must be supplied with a phonological matrix in order to be interpreted at PF.[32]

(41)

```
                    VP1
                  /      \
              NP1          V'1
              Mary       /     \
                       V1       PP1
                              /      \
                          NP2         P'1
                        the book    /     \
                                  P1       NP3
                                 /  \       |
                              N3_i   P1     t_i
                             shelf
```
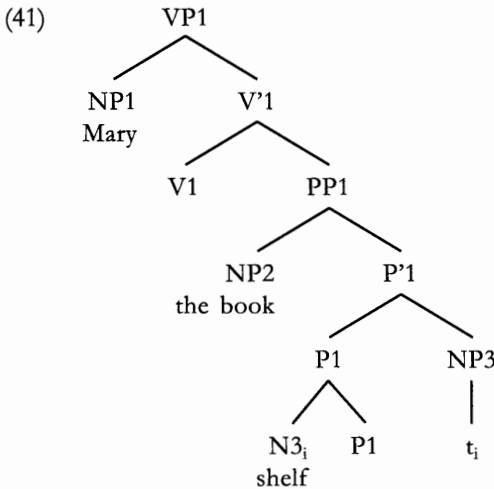
Next this process is repeated, incorporating the compounded item, P1 with N3, into the local head V1 to produce a structure along the lines of (42), which is successfully interpreted at PF, yielding the string (36).[33]

(31) I am assuming that incorporation is a form of adjunction. H&K do not assume this for all cases; in certain instances, they suppose that substitution, rather than adjunction, applies. However, no aspect of the current work is affected by adopting one assumption or the other.

(32) Note that, since this process is driven by the requirements of interpretability at PF, it is not incorporation in the widely accepted sense of Baker (1988).

(33) One might assume, following H&K (1991a) that "tree-pruning" eliminates all projections whose heads have been removed by incorporation, yielding a structure along the lines of (i).

(i)

```
                 VP1
               /      \
           NP1          V'1
           Mary        /     \
                     V1       NP2
                    /  \     the book
                  P1    V1
                 /  \
              N_i   P1_j
             shelf
```
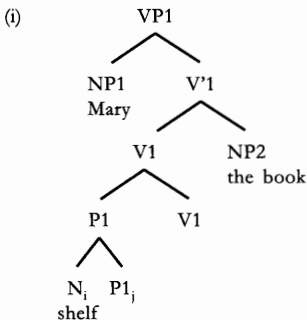
Ken Hale (pc) has suggested to me that an analysis roughly along such lines may be indicated by the acceptability of sentences like (ii).

(42)

```
                        VP1
                       /    \
                    NP1      V'1
                    Mary    /    \
                          V1      PP1
                         /  \    /    \
                       P1    V1 NP2    P'1
                      /  \      the book /  \
                   N3_i   P1_j          t_j  NP3
                   shelf                      |
                                              t_i
```
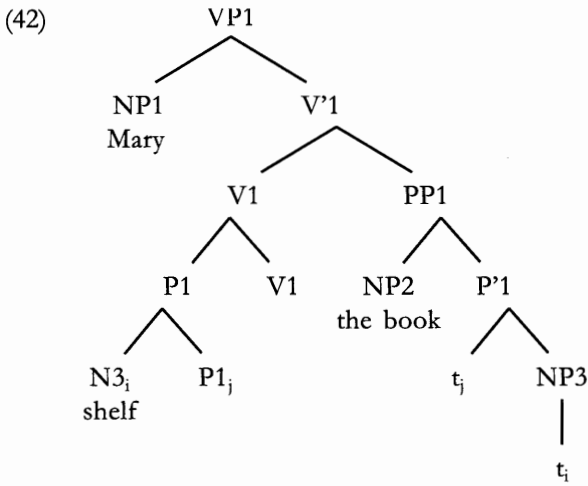
The underlying structure (40), termed "lexical relational structure" (H&K 1991a), establishes the set of semantic intuitions commonly referred to as "thematic relations." For example, in (40), the lexical relational structure ("LRS") —rather than any notion of "thematic role assignment" associated with lexical properties of the verb in question— establishes the intuition that "the book" is a THEME and the "shelf" is a GOAL.

Obviously, this approach entails that the thematic relational intuitions attending LRS persist in the "ordinary syntax" (which might be the output of tree pruning — cf. note 33) associated with the derived verb. In other words, for example, the object of the derived verb "shelve" gives the sense of being a (so-called) "THEME" in ordinary syntax only because that is what this nominal "gives the sense of being" in the related LRS; and the incorporated nominal "shelf" gives the sense of being a "GOAL" in ordinary syntax, since that is what that nominal "gives the sense of being" in the related LRS.[34] Another way to state this is that Hale and Keyser's LRS has precisely the thematic import for derived verbs that ordinary d-structure has for non-derived verbs.

(ii) Mary shelved the book on the top shelf.

In (ii), the PP "on the top shelf" seems to fill a place originally occupied by a distinct PP in the underlying structure (40), from which the verb *shelve* is derived; thus, some "pruning-like" process seems to ensure that the original PP "gets out of the way" of the PP that is added later.

In any case, however, such pruning is not required for any of the arguments made in the current work.

(34) One might object to the claim that these arguments "give the sense of being" anything at all in LRS, given that one never actually hears an LRS. However, the point can be illustrated by considering the syntactic structures associated with certain relevant non-derived verbs, for example with *put* in (i).

(i) Mary put the book on the shelf.

If one assumes that the d-structure of (i) (cf. 31a-b in the text) is parallel in essential respects to the LRS (40) in the text, then the observation can be made that, in both structures, the NP *the book* gives the sense of being a THEME and the NP "the shelf" gives the sense of being a GOAL. Thus, the theta positions in which arguments are located in LRS might be said independently to "give the sense of being" the relevant thematic relations.

This section will show that the distribution of LIAE on the arguments of derived verbs is constrained by the same principles that constrain its distribution on the arguments of the ordinary (i.e. non-derived) verbs discussed in Section 2: The relations induced by the generation of LIAE, much like the thematic relations considered by H&K, are established at LRS and persist through the formation of the derived verb. This suggests that, at the level of lexical semantics, the relationship between syntax and morphology is richer than has previously been argued.

3.1. The selection of LIAE on the arguments associated with derived verbs

The principles restricting the distribution of permissible LIAE selection on the arguments associated with derived verbs are the same as those that restrict the pattern of such selection on the arguments of ordinary verbs, discussed in Section 2. This outcome is predicted on the assumption that the LIAEC applies to LRS.

3.1.1. Unergative verbs

The subjects of unergative verbs can be selected for LIAE, as they are in (43) - (44).

(43a) Mary strolled.   (43b) *Mary strolled by accident.

(44a) Mary fished.   (44b) *Mary is accidentally fishing.

The contrasts in these examples show that the verbs *stroll*, and *fish* select animacy entailment in their subjects, producing the sense of an AGENT role.[35]

Further, sentences like (45a-b) show, by the familiar reasoning, that the animacy entailment in (43) - (44), and hence the sense of an AGENT role, is interpretational —in other words, it is an instance of LIAE: (45a-b) presumably are syntactically identical to (43) - (44), yet here the LIAE in the subject (and hence the sense of an AGENT role) is optional.

---

(35) Note that, for the case of *stroll*, the selection of the animacy entailment responsible for producing the AGENT role cannot be demonstrated by direct substitution of the subject as, for example, in (i).

(i) *The easel strolled, blown from leg to leg by a strong wind.

The problem here is that, since *stroll* selects a human subject, one cannot tell whether the oddness of (i) is due to the fact that easels are inconsistent with the AGENT role, or simply to the fact that they are not human. Similar remarks apply to the case of *fish*: Here, again, the selection of the animacy entailment responsible for producing the AGENT role cannot be demonstrated by substitution into the subject as in (ii).

(ii) *The dead tree fished, one of its branches being under water and acting as a hook.

Since *fish* selects a human subject, one cannot tell whether the oddness of (ii) is due to the fact that dead trees are inconsistent with the AGENT role, or rather to the fact that they are not human.

(45a) Mary hummed.   (45b) The engine hummed.

Also note that, in (45a-b), LIAE induces the sense of the AGENT role in an argument that would otherwise be discerned only as a CAUSER.

The behavior of the unergatives is predicted by (27), assuming that this constraint applies to LRS, and that, following Hale and Keyser (see eg. this volume), such verbs are derived from a transitive LRS, as shown in (46) for the case of (44a).

(46)
```
            VP1
          /     \
       NP1       V'1
      Mary      /    \
             V1       NP1
                       |
                       N1
                      fish
```
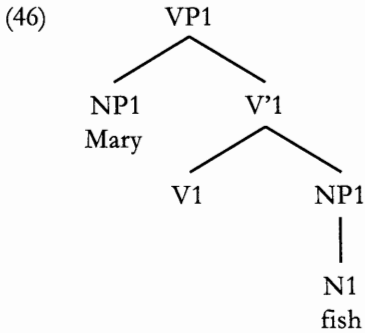
Here, the object nominal "fish" incorporates (via head-to-head movement) into its governing sister, the local head V1, producing a structure along the lines of (47), which yields the string (44a).

(47)
```
            VP1
          /     \
       NP1       V'1
      Mary      /    \
             V1       NP1
            /  \       |
         N1ᵢ   V1      tᵢ
        fish
```
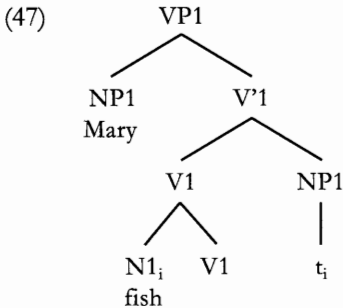
Now, (27) predicts that unergative verbs can select LIAE in their subjects. As can be seen in (46), both the subject NP1 and the object NP2 are arguments of the same verbal head V1; hence the subject satisfies clause (a) of the LIAEC. And since no lexical interpretation happens to assign animacy entailment to the object —in other words, LIAE is not generated on NP2[36]— the subject also satisfies clause (b) of the LIAEC. Thus, (27), applied to LRS, correctly predicts that LIAE can be generated in the subject of an unergative.

(36) Note that LIAE is not generated on the argument *fish* in (46), irrespective of the fact that fish themselves presumably are capable of satisfying the selectional needs of LIAE, at least with respect to certain of the thematic roles.

In addition, I propose that the capacity for a verb to idiosyncratically select optional interpretations holds of LRS as well as of d-structure. From this it follows not only that LIAE is generable in the subjects of unergative verbs like those in (43) and (44), but also that LIAE is selectable in such positions. In other words, the theory correctly predicts that the language should have the potential to create verbs like *stroll* and *fish* —i.e. unergative verbs that select LIAE (hence the AGENT role) in their subjects.

On the other hand, contrary to what one might expect, there do not seem to exist any unergative verbs in which LIAE is selected in the LRS object. In other words, for example, one cannot find unergatives along the lines of the imaginary SENSOR-object verb *child* in (48), meaning something like "to amaze a child."

(48)   *The magic show childed.

The theory developed so far in this work would suggest the possibility of such verbs, deriving from the LRS (49), with the object nominal *child* incorporating into the verbal head to produce a structure along the lines of (50).
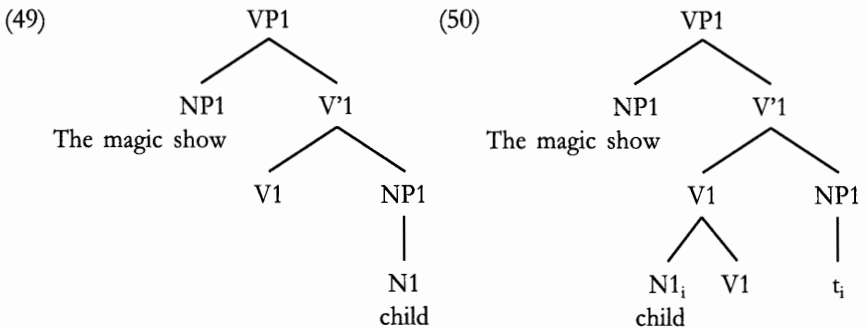
I propose that the reason that verbs of this kind don't exist is because of a general restriction along the lines of (51).

(51)   Argument Restriction on LIAE: For any item X, if LIAE is generated on X, X must be an argument.

I assume here that, when any nominal attaches to a verbal head, it loses its referential function and consequently ceases to be an argument. Thus, by (51), it is impossible for LIAE ever to persist on any nominal that has become the root of a derived verb.

Assuming that the selection of a SENSOR role proceeds only via the selection of LIAE, it follows that this role cannot be selected on the incorporated direct object. In other words, (51) predicts, evidently correctly, that the language should be incapable of creating unergative verbs with meanings like that of the imaginary

"child" in (48) —i.e., unergative verbs that would select LIAE (hence the SENSOR role) in their underlying direct objects.

3.1.2. Verbs derived from ditransitive structures (location, locatum, and "possession" verbs)

A location or locatum verb can select LIAE in its subject as in (52) - (53), but never in its direct object, nor in its incorporated oblique object.

(52a) Mary shelved the book.
(52b) *Mary shelved the book by accidentally bumping into it.

(53a) Mary saddled the horse.
(53b) *Mary saddled the horse by accidentally bumping into it.

The contrasts in (52) - (53) show that the verbs *shelve* and *saddle* select animacy entailment in their subjects, producing the sense of an AGENT role.

Further, sentences like (54a-b) show, by the usual reasoning, that the animacy entailment in (52) - (53), and hence the sense of an AGENT role, is interpretational —in other words, it is an instance of LIAE: (54a-b) presumably are syntactically identical to (52) - (53), yet here the animacy entailment in the subject (and hence the sense of an AGENT role) is optional.[37]

(54a) Mary should center the cursor.
(54b) A good knock on the side of the monitor should center the cursor.

Also note that, in (52) - (54a), LIAE induces the sense of an AGENT role on an argument that would otherwise be discerned only as a CAUSER.

The same remarks hold with respect to "possession verbs" (which I refer to as such since they derive from possessed nominals), as in (55) - (56).

(55) We provisioned those mountain climbers.
(56) *We provisioned those mountain climbers by accidentally dropping food into their back packs.

The contrast between these examples shows that the verb *provision* denotes a deliberate activity, and therefore it must select animacy entailment in its subject, producing the sense of AGENT role.

---

(37) Interestingly, most location and locatum verbs seem to require agentive subjects, as in (i) - (vi).

(i)	Mary boxed the apples.	(iv)	*The earthquake corralled the ponies.
(ii)	*The tornado boxed the apples.	(v)	The pilot landed the plane.
(iii)	Mary corralled the ponies.	(vi)	*The wind sheer landed the plane.

I hope to account for this phenomenon in future work.

Further, (57a-b) show, by the usual reasoning, that the animacy entailment in (55), and hence the sense of an AGENT role, is interpretational —in other words, it is an instance of LIAE: (57a-b) presumably are syntactically identical to (55), yet here the animacy entailment in the subject (and hence the sense of an AGENT role) is optional.

(57a)   Mary watered my lawn pretty well.
(57b)   That rainstorm watered my lawn pretty well.

Also note that, in (55) - (57a) as in (52) - (54a), LIAE induces the sense of an AGENT role in an argument that would otherwise be discerned only as a CAUSER.

The behavior of the location and locatum verbs is predicted by (27), again assuming that this constraint applies to LRS, and assuming, after a proposal in H&K 1993, that such verbs are derived from a ditransitive LRS, as shown in (58) for the case of (52a).[38]

(58)
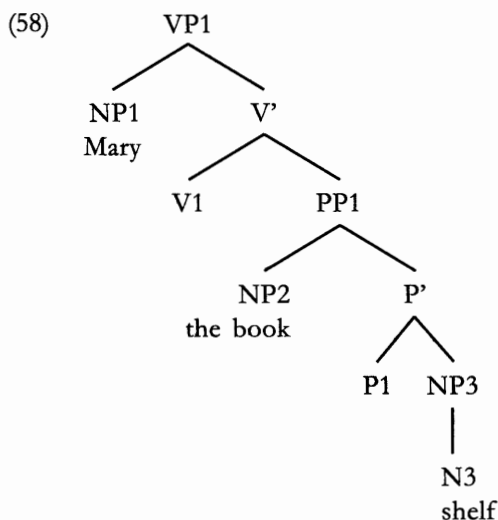
Here, the oblique object nominal *shelf* incorporates via head-to-head movement, ultimately forming a structure along the lines of (59) (= 52a).

(38) Note that the LRS of the location and locatum verbs differs from the d-structure of the corresponding non-derived ditransitive verbs. The latter have essentially the structure proposed by Larson 1988, containing an embedded verbal projection (cf. Subsection 2.5) which the former lacks (cf. the current subsection). This difference accounts for the fact that, as noted in Subsection 2.5, LIAE can be generated on the direct object of a non-derived ditransitive whereas, as noted in the current subsection, it cannot be generated on the direct object of a location or locatum verb.

(59)

```
                    VP1
                   /    \
               NP1        V'1
               Mary      /    \
                       V1       PP1
                      /  \     /    \
                    P1    V1  NP2     P'1
                   /  \      the book /  \
                 N3ᵢ   P1ⱼ           tⱼ   NP3
                 shelf                     |
                                           tᵢ
```
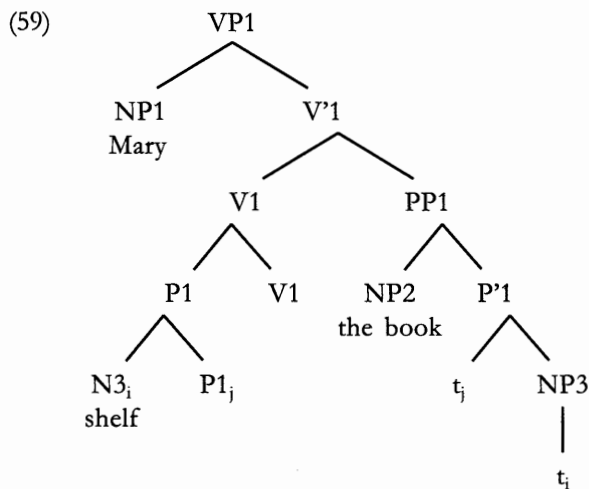
Assuming that possession verbs are derived in the same way as location and locatum verbs, then (27) will predict the behavior of these verbs as well. Such verbs will start from an LRS along the lines shown in (60) for the case of (55).

(60)

```
                    VP1
                   /    \
               NP1        V'
               We        /  \
                       V1     PP1
                             /    \
                           NP2      P'
          those mountain climbers  /  \
                                  P1    NP3
                                         |
                                         N3
                                      provision
```
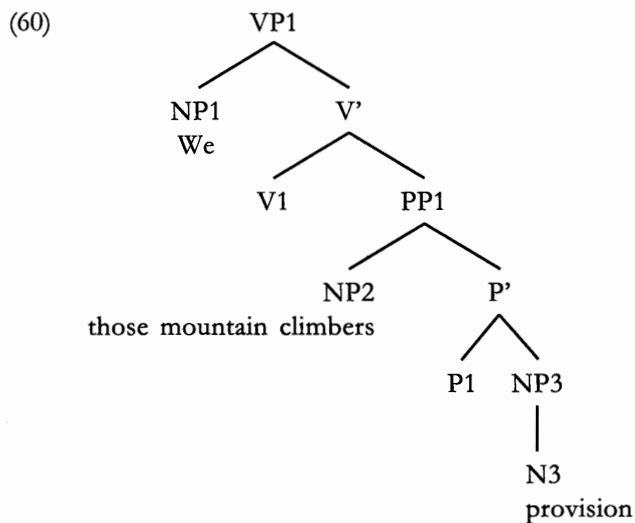
In the familiar way, the direct object nominal "provision" incorporates via head-to-head movement, ultimately forming a structure along the lines of (61).[39]

(39) I assume that the difference between location verbs, on the one hand, and locatum and possession verbs on the other, lies in the character of their associated prepositional heads, e.g. in the character of P1 in (58) and (60). In the case of location verbs, the prepositional head is of the category "terminal coincidence" (cf. H&K 1993); in that of locatum and possession verbs, it is of the category "central coincidence" (cf. H&K 1993).

(61)

```
                        VP1
                       /    \
                  NP1        V'1
                  We        /   \
                        V1         PP1
                       /  \       /   \
                   P1      V1   NP2      P'1
                  /  \          those   /   \
              N3ᵢ    P1ⱼ      mountain  tⱼ    NP3
           provision          climbers        |
                                              tᵢ
```
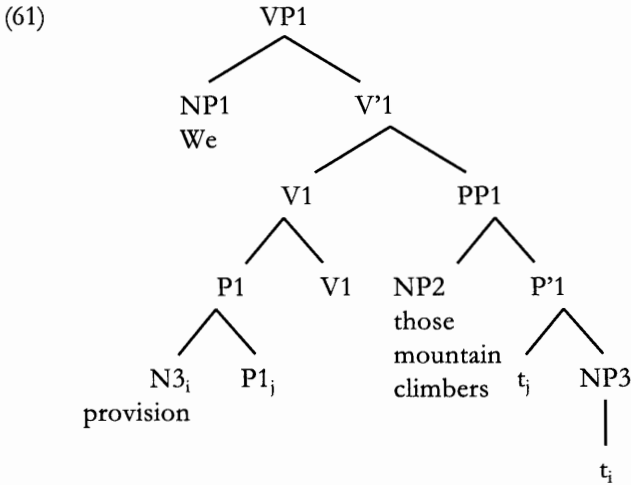
Now the permissibility of LIAE in the subjects of location, locatum and possession verbs is predicted by the application of (27) to LRS. As can be seen in the LRSs (58) and (60), the subject NP1 and the prepositional phrase PP1 are arguments of the same verbal head V1, and therefore the subject satisfies clause (a) of the LIAEC. And, since no lexical interpretation happens to assign animacy entailment to the prepositional phrase —in other words, LIAE is not generated on PP1— the subject also satisfies clause (b) of the LIAEC. Thus, (27) correctly predicts that LIAE can be generated in the subjects of location, locatum and possession verbs.

Moreover, since verbs can select optional interpretations as a matter of lexical idiosyncrasy, it follows not only that LIAE is generable in the subjects of verbs like those in (52), (53) and (55), but also that LIAE is selectable in such positions. In other words, the theory correctly predicts that the language should have the potential to create verbs like "shelve", "saddle" and "provision" —i.e. verbs derived from ditransitive LRSs that select LIAE (hence the AGENT role) in their subjects.

Interestingly, there does not appear to exist any location, locatum or possession verb that selects LIAE in its object.

On the one hand, verbs like *jail*, *hood* and *provision* do select animacy entailment in their objects, as is indicated by the contrasts in (62) - (64);[40] and one could conceivably argue that this animacy entailment affects the nature of the thematic role in the object.

---

(40) One might object that the objects of *jail* and *hood* are selected for a property narrower than mere animacy entailment. For example, a dog is animate, but (i) and (ii) seem to me to be slightly degraded.

    (i) (?)The police jailed the dog.   (ii) (?)The dean hooded the dog.

In fact, I suspect that the objects of these verbs are selected for the capacity for ownership, the same property selected in nouns that receive LIAE to become BENEFICIARIES, as discussed in note 10. If this is correct, it raises the possibility of discerning configurational principles that would relate thematic attributes produced by the generation of LIAE, on the one hand, and thematic attributes produced by the selection of (non-interpretational) animacy, on the other. I hope to return to this problem in future research.

(62a) Governments jail dissidents.

(62b) *Governments jail threatening documents. (meaning they put threatening documents in jails.)

(63a) The dean hooded the doctoral recipients.

(63b) *The dean hooded the coat rack. (meaning the dean put a hood on the coat rack.)

(64a) We provisioned those mountain climbers.

(64b) *We provisioned those back packs.

Suppose for the sake of argument that animacy entailment makes the direct object into something like an "ENTRAP-EE" in (62) (since the object suffers entrapment at the hands of the AGENT), a "DRESS-EE" in (63) (since the object is dressed by the AGENT), and an "ALIENABLE POSSESSOR" in (64) (since the object gains alienable possession of something at the hands of the AGENT). I am not concerned here to characterize the thematic roles in question with complete accuracy. What matters is that the animacy entailment at issue clearly seems not to be interpretational, i.e. it is not an instance of LIAE, since it cannot be optionally generated by independent means: As far as I can tell, there are no sentences syntactically parallel to (62a), (63a) or (64a), in the objects of which animacy entailment, and hence a role (roughly) along the lines of an ENTRAP-EE, DRESS-EE or ALIENABLE POSSESSOR, is optionally available.

There do exist sentences like (65a-c), which are syntactically parallel to (62) - (64), but in which the direct object lacks animacy entailment (the apples are not an ENTRAP-EE, the bottle is not a DRESS-EE, and the Mary's pants are not an ALIENABLE POSSESSOR).

(65a) Mary boxed the apples. (65c) Mary stained her pants.[41]

(65b) Mary capped the bottle.

But, again, in no such instance does the relevant animacy entailment become an option.[42]

The reason that optional animacy entailment (and hence an optional role along the lines of ENTRAP-EE, DRESS-EE or ALIENABLE POSSESSOR) is unavailable in the objects of location, locatum or possession verbs is because animacy entailment cannot be generated in this particular position by applying an interpretation to these verbs' associated LRSs: Thus, LIAE cannot be generated, nor hence selected, on the relevant arguments.

The impermissibility of LIAE, and hence of LIAE selection, in the object is predicted by (27). The argument at issue, represented by NP2 in (58) and (60), is not an argument of any verbal head, and therefore cannot satisfy clause (a) of the LIAEC, (27). Thus, by (27), no interpretation can generate LIAE in the object.

(41) Note that in (65c) Mary's pants might be said to be a POSSESSOR of the stain, but clearly they are not an ALIENABLE one.

(42) For example, the animate objects do not seem to acquire the roles ENTRAP-EE, DRESS-EE, or ALIENABLE POSSESSOR in (i), (ii) and (iii), respectively.

(i) Mary boxed John. (ii) Mary capped John. (iii) Mary stained John.

Moreover, assuming again that the selection of a VOLUNTEER role[43] proceeds only via the selection of LIAE, it follows that this role cannot be selected on the object. In other words, (27) predicts, evidently correctly, that the language should be incapable of creating location verbs with meanings roughly like "to act so as to cause (someone) to presumably go onto a shelf, for the sake of her/his own apparent interests", locatum verbs with meanings roughly like "to act so as to cause (someone) to presumably get with saddle, for the sake of her/his own apparent interests", or possession verbs with meanings roughly like "to act so as to cause (someone) to presumably get with provisions, for the sake of her/his own apparent interests" —i.e., verbs derived from ditransitive LRSs that would select LIAE (hence the VOLUNTEER role) in the arguments that underlie their surface objects.

The status of animacy entailment in the objects of location, locatum and possession verbs like those in (62a), (63a) and (64a) seems to parallel that of animacy entailment in the subjects of adjectival-complement intransitives like those in (66a-e) (= 6a-e).

(66a) Mary got mad.   (66d) Mary became happy.
(66b) Mary became sad.   (66e) Mary was glad.
(66c) Mary turned scared.

And the status of animacy entailment in the objects of location, locatum and possession verbs like those in (65a-c)[44] seems to parallel that of animacy entailment in the subjects of adjectival-complement intransitives like those in (67a-c) (= (8) - (10)). Animacy entailment is obligatory in all of the former, impossible in all of the latter, and, for structural reasons, is non-interpretational throughout.

(67a) Mary turned red.   (67b) Mary became tall.   (67c) Mary got old.

Also, it should be noted here that the impermissibility of LIAE in the object of a location, locatum or possession verb supports the proposal that, in LRS, this argument is in SPEC of PP —as is argued by H&K on independent grounds, and as is illustrated in (58) and (60)— rather than in SPEC of an embedded VP, as a Larsonian structure would have it. (Cf. the structures in Subsection 1.5.)

On the one hand, in a Larsonian structure, the direct and oblique objects both would be arguments of the lower verbal head; and so, whenever it should happen that no lexical interpretation would assign animacy entailment to the oblique, then the direct object argument would satisfy both clauses of the LIAE (27), and therefore would be deemed an acceptable site for the generation of LIAE.

On the other hand, in the LRSs (58) and (60), the direct object is not an argument of any verbal head; hence, it cannot satisfy the LIAE under any circumstances, and so the impermissibility of LIAE follows automatically.

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(43) I assume that the VOLUNTEER role would be the relevant one to consider here.

(44) For the sake of argument, I am considering (65c) to be a kind of possession verb. Here, however, the object would have a role along the lines of INALIENABLE POSSESSOR, not that of ALIENABLE POSSESSOR as in (64).

Finally, it appears that, in the LRSs of location, locatum and possession verbs, LIAE can never be generated, nor hence selected, in the oblique object nominal that forms the root of the derived verb. As it happens, the vast majority of location and locatum verbs are like those in (52) - (65) above, deriving from nominals that are themselves inanimate, and hence incapable of serving as sites for the generation of LIAE. The only instance I know of in which such a verb is derived from an animate nominal is the case of *horse*, exemplified in (68), which can have either the locational meaning "to place upon a horse", or the possessional meaning "to provide with a horse."[45]

(68) The general horsed the troops.

Here, the underlying oblique object *horse* expresses a GOAL (if the verb is locational) or something along the lines of a THEME (if the verb is possession-al)[46] in the expected way but, clearly, it is not a potential site for LIAE. For example, the horse cannot be interpreted as a BENEFICIARY, i.e. (68) cannot mean that the general believes that the horses could (be seen to) acquire some power over the troops by receiving them; and neither can the horse be interpreted as a VOLUNTEER, i.e. (68) cannot mean that the general believes that the horse's interests could be (seen to be) served by its going to the troops.

The absence of any location, locatum or possession verbs having LIAE in their underlying oblique objects follows both from (27), and also from (51), repeated here as (69), which was formulated to account for the impermissibility of LIAE in the underlying objects of unergative verbs.

(69)   Argument Restriction on LIAE: For any item X, if LIAE is generated on X, X must be an argument.

(27) predicts this outcome since the underlying oblique, represented for example by NP3 in (58) and (60), is not an argument of any verbal head, and therefore cannot satisfy clause (a) of the LIAEC.

And (69) also predicts this outcome since the underlying oblique, having incorporated into the verbal head, loses its referential function and therefore ceases to be an argument.

Moreover, assuming again that the selection of a BENEFICIARY or VOLUNTEER role[47] proceeds only via the selection of LIAE, it follows that neither of these roles can be selected on the underlying oblique. In other words, (27) and (69) each predict, evidently correctly, that the language should be incapable of creating verbs derived from ditransitive LRSs with meanings roughly like "to act so as to cause (something) to presumably go into the possession of, and hence into being under the power of, someone" or like "to act so as to cause (some one a horse) to presumable get with soldiers, for the sake of her/his own apparent interests —i.e.,

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(45) On the location reading, a person who is horsed is placed upon a horse, but she does not necessarily possess the animal. On the transfer-of-possession reading, a person who is horsed comes to possess the horse, but she is not necessarily placed upon it.

(46) An intuition is generated according to which the horse moves into a state of being possessed by the (underlying) indirect object.

(47) I assume that the BENEFICIARY and VOLUNTEER roles would be the relevant ones to consider here.

verbs derived from ditransitive LRSs that would select LIAE (hence the BENEF-ICIARY or VOLUNTEER role) in their underlying oblique objects.[48]

3.1.3. Inchoative verbs

Inchoative verbs apparently are unable to select LIAE in any of their arguments.

3.1.3.i. Intransitive inchoatives

When such a verb is intransitive as in (70) - (75), it cannot select LIAE in its subject, which is its sole argument.

(70)   Mary gladdened (at the news).

(71)   Mary saddened (when she heard the news).

(72)   *The hologram of Mary gladdened (at the news).

(73)   *The hologram of Mary saddened (when the news came).

(74)   The sky darkened.   (75)   Mary reddened (with anger).

On the one hand, it is true that certain verbs, such as *gladden* and *sadden*, do select animacy entailment in their subjects, as is made clear by the contrasts in (70) - (73), above. This animacy entailment produces the sense of an EXPERIENCER role in the subject (cf. 6a-e in the Introduction).

However, the animacy entailment selected here is like that seen in the (arguments underlying the objects of) location, locatum and possession verbs: It cannot be optionally generated by independent means, and therefore it is not interpretational, i.e. not an instance of LIAE; as far as I can tell, there are no sentences syntactically parallel to (70 - 71) (specifically, no sentences featuring intransitive inchoative verbs) in which, in the subject, animacy entailment, and hence the sense of an EXPE-RIENCER role, is optionally available.

There do exist sentences like (76) - (77), which are syntactically parallel to (70 - 71), but in which the subject lacks animacy entailment (EXPERIENCER-hood).

(76)   The gravy thinned.   (77)   The sky brightened.

But, again, in no such instance does the relevant animacy entailment become an option.

The ungenerability of LIAE here is predicted by (27), again assuming that this constraint applies to LRS, and assuming, following H&K (see Hale & Keyser this volume), that such verbs are derived from an LRS along the lines shown in (78) for the case of (74).

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(48) The fact explained here is noted by H&K, who point out that there exist verbs like that in (i), but not like that in (ii).

    (i)   Mary banked her money. (Meaning Mary put her money in the bank.)

    (ii)   *Mary churched her money. (Meaning Mary donated her money to the church.)

(78)

```
              VP1
           ╱      ╲
        NP1        V'1
      The sky     ╱    ╲
                V1      AP1
                         │
                         A1
                        dark
```
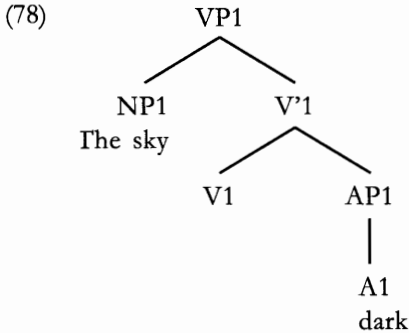
Here, the adjectival complement *dark* incorporates (via head-to-head movement) into its governing sister, the local head V1, producing a structure along the lines of (79).

(79)

```
              VP1
           ╱      ╲
        NP1        V'1
      The sky     ╱    ╲
                V1      AP1
              ╱   ╲      │
           A1ᵢ    V1     tᵢ
          dark
```
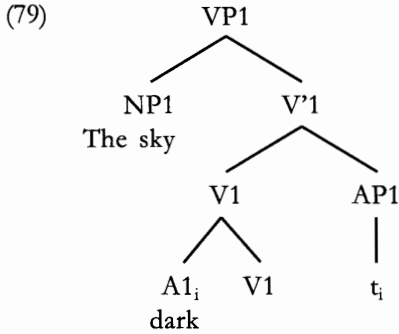
Note that the intransitive inchoative LRS represented by (78) is identical to the structure associated with the unaccusatives (6a-e) (= 66a-e), repeated here as (80a-e). The impossibility of generating LIAE in the subjects of intransitive inchoatives is predicted by (27), for the same reasons as it was for the sentences in (80a-e).

(80a) Mary got mad.   (80d) Mary became happy.
(80b) Mary became sad.   (80e) Mary was glad.
(80c) Mary turned scared.

The argument at issue, represented by NP1 in the LRS (78), is the argument of a verbal head, represented by V1, but it is the only argument that this head has. Therefore, it cannot satisfy clause (a) of (27). Consequently, no interpretation can generate LIAE on it.

Moreover, assuming again that the selection of a VOLUNTEER role[49] proceeds only via the selection of LIAE, it follows that this role cannot be selected on the argument in question. In other words, (27) predicts, evidently correctly, that the language should be incapable of creating intransitive inchoative verbs with mean-

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(49) I assume that the VOLUNTEER role would be the relevant one to consider here.

ings roughly like "to act so as to cause oneself to become happy, for the sake of one's own apparent interests" —i.e., verbs derived from intransitive adjectival-complement LRSs that would select LIAE (hence the VOLUNTEER role) in their subjects.

Finally, note that the status of animacy entailment in the subjects of intransitive inchoative verbs like those in (70 - 71) seems to parallel that of animacy entailment in the subjects of adjectival-complement intransitives as in (80a-e) (= 66a-e, 6a-e), and in the (arguments underlying the surface) objects of location, locatum and possession verbs as in (62a), (63a) and (64a), respectively. And the status of animacy entailment in the subjects of intransitive inchoative verbs like those in (74 - 77) seems to parallel that of animacy entailment in the subjects of adjectival-complement intransitives as in (67a-c) (= (8 - 10)), and in the (arguments underlying the surface) objects of location, locatum and possession verbs as in (65a-c), respectively. Animacy entailment is obligatory in all of the former, impossible in all of the latter, and, for structural reasons, is non-interpretational throughout.

3.1.3.ii. Transitive inchoatives

When inchoative verbs are transitive, as in (81) - (82), they are unable to select LIAE on either their subject or object argument.

(81a) The news gladdened Mary.
(81b) *The news gladdened the hologram of Mary.

(82a) The news saddened Mary.
(82b) *The news saddened the hologram of Mary.

On the one hand, the contrast in (81) - (82) makes it clear that transitive inchoatives can select animacy entailment in the object. This animacy entailment produces the sense of an EXPERIENCER role in the object (cf. Subsection 3.1.3.i).

However, the animacy entailment selected here is like that seen in the subjects of intransitive inchoative verbs, and in the (arguments underlying the objects of) location, locatum and possession verbs: It cannot be optionally generated by independent means, and therefore it is not interpretational, i.e. not an instance of LIAE; as far as I can tell, there are no sentences syntactically parallel to (81 - 82) (i.e. no sentences featuring transitive inchoatives) in which, in the object, animacy entailment, and hence the sense of an EXPERIENCER role, is optionally available.

There do exist sentences like (83) - (84), which are syntactically parallel to (81 - 82), but in which the object lacks animacy entailment (EXPERIENCER-hood).

(83)   The clouds darkened the sky.   (84) The fire reddened the tomatoes.

But, again, in no such instance does the relevant animacy entailment become an option.[50]

(50) (i) presents an interesting example in this connection.

(i) *The news reddened Mary (with anger).

The ungenerability of LIAE here is predicted by (27), again assuming that this constraint applies to LRS, and assuming, following H&K, that such verbs are derived from an LRS along the lines shown in (85) for the case of (82a).

(85)

```
              VP1
          ／      ＼
      NP1          V'1
    The news     ／    ＼
              V1        VP2
                      ／    ＼
                  NP2        V'2
                  Mary     ／    ＼
                        V2        AP1
                                   |
                                   A1
                                   sad
```
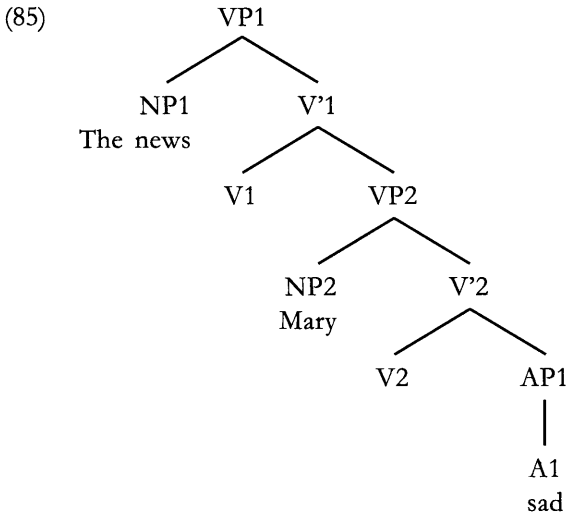
Here, the adjectival complement *sad* incorporates via head-to-head movement, ultimately forming a structure along the lines of (86).

(86)

```
              VP1
          ／      ＼
      NP1          V'1
    The news     ／    ＼
              V1          VP2
            ／  ＼      ／    ＼
          V2     V1  NP2      V'2
        ／  ＼       Mary    ／    ＼
     A1ᵢ     V2ⱼ            tⱼ      AP1
     sad                            |
                                    tᵢ
```
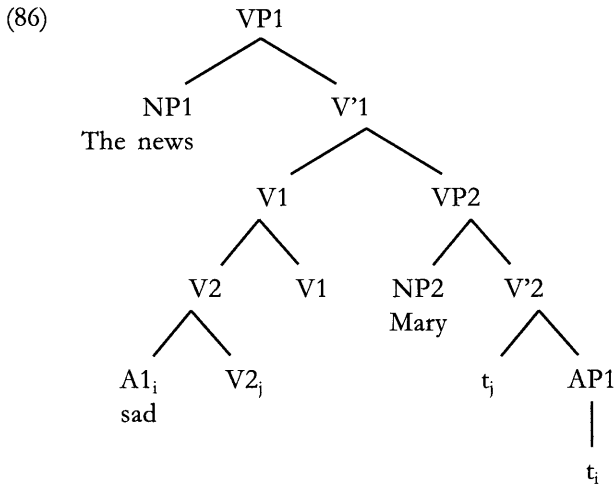
The impermissibility of LIAE follows essentially for the same reasons as it does with respect to the subjects of the intransitive inchoatives, considered above. The argument

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Here, pragmatic considerations force one to look for a reading that would generate LIAE on the object, to produce a SENSOR role. But, since LIAE is never available in the objects of transitive inchoatives, (i) is rendered unacceptable.

at issue, represented by NP2 in the LRS (85), is the argument of a verbal head, represented by V2, but it is the only argument that this head has. Therefore, it cannot satisfy clause (a) of (27). Consequently, no interpretation can generate LIAE on it.

Moreover, assuming again that the selection of a VOLUNTEER role[51] proceeds only via the selection of LIAE, it follows that this role cannot be selected on the argument in question. In other words, (27) predicts, evidently correctly, that the language should be incapable of creating transitive inchoative verbs with meanings roughly like "to act so as to cause (someone) to become happy, for the sake of her/his own apparent interests" —i.e., verbs derived from transitive adjectival-complement LRSs that would select LIAE (hence the VOLUNTEER role) in their objects.

A transitive inchoative also cannot select LIAE in its subject, but this is a slightly subtler point.

At first glance, it would appear that transitive inchoatives in fact can select LIAE in their subjects since, as (87 - 90) demonstrate, such arguments indeed can serve as sites for the generation of interpretational animacy entailment.

(87a) The cook thinned the gravy.
(87b) The rainwater thinned the gravy.

(88a) The street sweeper cleared the roadway.
(88b) The high winds cleared the roadway.

(89a) John cleaned the clothes.
(89b) The washing machine cleaned the clothes.

(90a) The farmer fattened the pig.
(90b) A diet of lard fattened the pig.

Among (87) - (90), the subject of each *a* sentence can be understood as an AGENT, while the subject of each *b* sentence cannot. The animacy entailment on which this AGENT role depends must be considered interpretational since the members of each *a* and *b* sentence pair are identical save for the character of their subjects.

However, there do not appear to exist any transitive inchoatives in which the interpretational animacy entailment in the subject actually is selected. In other words, there do not seem to exist any transitive inchoatives whose acceptability requires interpretational animacy entailment in the subject. So, while the animacy entailment at issue here is indeed interpretational, it apparently is not lexico-interpretational —in other words, it cannot be an instance of LIAE.[52]

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(51) I assume that the VOLUNTEER role would be the relevant one to consider here.

(52) Other instances of animacy entailment that are interpretational but not lexico-interpretational can occur in the subjects of unaccusatives as in (i), in the surface subjects of passives as in (ii), or in the surface subjects of raising verbs as in (iii).

    (i)   In order PRO$_i$ to annoy her host, <u>Mary</u>$_i$ arrived hungry.
         (Cf. *In order PRO$_i$ to annoy Mary's host, <u>the package</u>$_i$ arrived dirty.)
    (ii) <u>Mary</u>$_i$ was examined by the doctor in order PRO$_i$ to please her worried friends.
         (Cf. *The <u>specimen</u>$_i$ was examined by the doctor in order PRO$_i$ to please Mary's worried friends.)
    (iii) <u>PRO</u>$_{arb}$ seeming to be industrious is hard work.

Of course, this result contradicts expectations: Based upon the LIAEC (27), one would predict that the subject of a transitive inchoative should readily serve as a site for LIAE. As can be seen in the LRS (85), both the subject NP1 and the lower verb phrase VP2 are arguments of the verbal head V1, and hence the subject satisfies clause (a) of the LIAEC. And, since no lexical interpretation could ever select animacy entailment in VP2, the subject also satisfies clause (b) of the LIAEC. Thus, (27) would predict that LIAE should be generable in the subject; and therefore, one would think that it should be possible to find such verbs that would select LIAE in their subjects.

However, I do not believe that transitive inchoatives represent a genuine counterexample to the LIAEC. Instead, these cases seem to follow a broader pattern: In general, in any sentence whose verb can alternate between intransitive and transitive variants, the status of animacy entailment in the subject of the transitive is determined by the status of animacy entailment in the subject of the intransitive.

So, for the cases in point, LIAE is impermissible in the subjects of transitive inchoatives because it is impermissible in the subjects of the related intransitive inchoatives (cf. Subsection 3.1.3.i).

This relation extends to non-inchoatives as well. Consider, for example, the behavior of the transitive non-inchoatives in (91) - (92).

(91a) Mary walked the dog down the street.
(91b) *The wagon walked the dog down the street.[53]

(92a) The general marched the soldiers into the field.
(92b) *A strong wind marched the soldiers into the field.

The contrasts in these cases show that the transitive verbs *march* and *walk* select animacy entailment in their subjects, producing the sense of an AGENT role. Further, sentences like (93 - 96) show, by the familiar reasoning, that the animacy entailment in question, and therefore the sense of an AGENT role, is interpretational —in other words, it is an instance of LIAE: (93 - 96) presumably are syntactically identical to (91 - 92), yet here the animacy entailment in the subject (and hence the sense of an AGENT role) is optional.

(93a) Mary moved the leaves.   (93b) The wind moved the leaves.
(94a) Mary broke the plate.   (94b) The earthquake broke the plate.

(95a) Mary dropped a ton of snow onto my roof.
(95b) That storm dropped a ton of snow onto my roof.

Animacy entailment is required in the arguments in question (underlined in each example), producing the sense of an AGENT role. However, the verbs in question clearly do not select animacy entailment in these arguments, and therefore the animacy entailment in evidence must be interpretational. At the same time, it also turns out that there are no unaccusative, passive, or raising verbs that ever select LIAE in their surface subjects. Therefore, this animacy entailment, though interpretational, clearly is not lexico-interpretational.

(53) Note that one could imagine a circumstance in which a dog was leashed to a wagon, and the wagon was rolling down the street with the dog in tow. However, even describing this situation, (91b) remains unacceptable.

(96a) Mary rolled the ball down the street.

(96b) The force of the wind rolled the ball down the street.

Thus, to reiterate, transitive non-inchoative verbs like those in (91 - 92) can select LIAE in their subjects.[54]

Now, the status of animacy entailment in the subject of each of (91 - 96) is determined by the status of animacy entailment the subject of the related intransitive form. Animacy entailment is optional in the subjects of (93 - 96) since it is optional in the subjects of (97) - (100).

(97a) The leaves moved.   (97b) Mary moved.

(98a) The plate broke.   (98b) The horse broke.

(99a) A ton of snow dropped onto my roof.

(99b) Mary dropped onto my roof.

(100a) The ball rolled down the street.

(100b) Mary rolled down the street.

And animacy entailment is obligatory in the subjects of (91 - 92) since it is obligatory in the subjects of (101 - 102).[55]

(101a) The dog walked down the street.

(101b) *The easel walked down the street.

(102a) The soldiers marched into the field.

(102b) *The easel marched into the field.

On the basis of these considerations, I conclude that the blocking of LIAE in the subjects of transitive inchoative verbs is due to factors, operating independently of the LIAEC, which make the animacy entailment of the subjects of transitive verbs in general a function of the animacy entailment of the subjects of their related intransitive variants. I hope to explore this phenomenon in future research.

3.2. Conclusion of Section 3

This section has shown that the principles governing the distribution pattern of LIAE, and hence also of the possibility of LIAE selection, on the arguments associated with derived verbs are the same as those restricting these patterns on the arguments of ordinary verbs, discussed in Section 2. The LIAEC generates LIAE as an optional interpretation on arguments in base generated syntax, be it in the LRSs of derived verbs or in the d-structures of non-derived verbs;[56] the selection of LIAE proceeds only via the selection of such an optional interpretation.

(54) It is not clear to me whether the verbs in (91) - (92) ultimately are derived in H&K's sense, but this should not detract from the point being made here.

(55) Note that (101b) and (102b) remain unacceptable even if they are used to describe a circumstance in which a strong wind blows the easel forward so that it moves down the street, or into the field, alternately landing on one leg and then the other.

(56) Or, alternatively, the LIAEC generates LIAE as an optional interpretation on theta positions in the s-structures of non-derived verbs.

In addition, the ungenerability of LIAE in the (arguments underlying the surface objects of) the location, locatum and possession verbs argues, at least mildly, in favor of the LRSs proposed by H&K, and adopted in this work, to account for the derivation of these verbs.

4. Conclusion

This work argues for broadening the project of reducing thematic relations to syntax. On the one hand, thematic relations, conceived sufficiently narrowly, do indeed seem to reduce to properties of syntactic configuration, as H&K, and Jackendoff before them, have proposed. However, relations of LIAE, distinct from thematic relations in this strictest configurational sense, do not reduce to syntax but, instead, are generated by the application to syntax of a certain optional interpretation. This interpretation is constrained by the abstract syntactic principles stated in the LIAEC; but it is distinct from syntax itself.

Moreover, it appears that the generation of LIAE is the only means by which the AGENT, VOLUNTEER, BENEFICIARY and SENSOR roles can be produced. This means that the LIAEC imposes restrictions on any verb that selects any of these roles, effectively limiting the kinds of selection restrictions, and the combinations thereof, that can be generated by the lexicon.

Further, when it comes to the arguments of derived verbs, the restrictions on the generation (and hence selection) of LIAE indicates that any such instances of LIAE must originate on the syntax of LRS —leading to the natural generalization that LIAE is generated on base generated syntax, be it on the LRSs of derived verbs or on the d-structures of non-derived verbs. This means that the morphology of derived verbs must, so to speak, "remember" the LIAE (or the ungenerability thereof), possibly even after the LRS on which it was generated, and even selected, no longer exists.[57] Thus, at the level of lexical semantics, the relationship between syntax and morphology appears to be richer than has previously been argued.

Finally, the conception developed in this work may bring a certain binary order to much of the thematic relational realm, because it holds that, for each of a variety of thematic relations established by syntactic structure, there exists an animacy entailing subcase created by the generation of LIAE. For the CAUSER role there exists the LIAE-induced subcase AGENT; for the PATIENT role, the LIAE-induced subcase SENSOR; for the THEME role, the LIAE-induced subcase VOLUNTEER; and for the GOAL role, the LIAE-induced subcase BENEFICIARY. To the extent that such a "bifurcation" of semantic roles is on the right track, it lends support to the thrust of this work.

(57) Presumably, the LRSs in question would cease to exist if "tree-pruning" applies, as suggested with respect to ditransitive LRSs in note 33. Evidence like that presented in note 33 also can be created with respect to unergatives as in (i) - (ii), and also perhaps with respect to inchoatives as in (iii) - (iv).

    (i)   Mary burped a huge burp.
   (ii)   We ran a run so long, you'd think we were world class athletes.
  (iii)   ?The sky brightened so bright, it was blinding.
  (iv)   ?We cleaned the yard so clean, you could've smelled a raindrop.

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NESTED PATHS
IN SYNTACTICALLY ERGATIVE LANGUAGES

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1. Ergativity*

The term *ergativity* refers to the way in which the direct arguments of a verb are grouped together. In an ergative language, the intransitive subject (S) and the object of a transitive verb (O) form a natural class, excluding the transitive subject (A).[1] The most common manifestation of this grouping is in the Case and agreement systems. Consider the following examples from Dyirbal and Inuit in (1) and (2), respectively, which exhibit ergativity in their systems of Case. In the transitive examples in (a), the A argument has ergative Case, and O has nominative (also known as absolutive) Case. In (b), the S argument appears with nominative Case, the same Case as the O in (a).[2]

(1)   *Dyirbal*
        a. ŋuma-ø   yabu-ŋgu bura-n
             father-Nom mother-Erg see-Nonpast
             'Mother saw father'
        b. ŋuma-ø   banaga-n^{y}u
             father-Nom return-Nonpast
             'Father returned'   (Dixon 1979: 61)

    (1) The letters *A, S* and *O*, introduced in Dixon (1972) and now standard in the ergativity literature, represent the three direct arguments of a verb: the transitive subject, intransitive subject and object, respectively. Corresponding roughly to *Agent, Subject* and *Object*, they constitute a mixture of semantic and syntactic terms, as two different terms are required for the transitive and intransitive subjects.

    (2) The following abbreviations are used in the glosses: 1/2/3=first/second/third person, Acc=Accusative, All=Allative, AP=Antipassive, Compl=Complete, Dat=Dative, Det=Determiner, dir=directional, E(rg)=Ergative, f=feminine, Fut=Future, Imperf=Imperfect, Incomp=Incomplete, Ind=Indicative, Intr=Intransitive, Loc=Location, m(asc)=masculine, neg=negation, Nfut=Nonfuture, N(om)=Nominative, Pl/p=plural, Part=Participle, Perf=Perfective, prog=progressive, Real=Realis, Rel=Relativizer, rec=recent past, s=singular, suff=suffix, Tr=Transitive.

(2) *Inuktitut (Inuit)*
    a. Jaani-up tuktu-ø   malik-p-a-a
        John-Erg caribou-Nom follow-Ind-Tr-3sE.3sN
        'John followed the caribou'
    b. Jaani-ø   pisuk-p-u-q
        John-Nom walk-Ind-Intr-3sN
        'John walked'

In the examples from Mam in (3), ergativity is exhibited in the agreement system. The nominative agreement markers for the S and O arguments are identical, while ergative A agreement appears in a different form.

(3) *Mam (Mayan)*
    a. ma ch(i)-ok t-tzeeq'an   b. ma chi b'eet
        rec 3pN-dir 3sE-hit   rec 3pN walk
        'he/she/it hit them'   'they walked'
        (England 1983: 62)   (England 1983: 58)

In an accusative system, on the other hand, A and S are grouped together, excluding O. This is shown with Case in Japanese (4), and with agreement in Chickasaw (Muskogean) (see (5)). In these examples, the A and S arguments appear with the same Case or agreement, different from that of O.

(4) *Japanese*   (5) *Chickasaw (Muskogean)*
    a. Jon-ga   hon-o   yon-da   a. has-sa-shoo-tok
        John-Nom book-Acc read-past   2pN-1sAcc-hug-Past
        'John read the book'   'you all hugged me'
    b. Jon-ga   ki-ta   (Payne 1982: 353)
        John-Nom come-Past   b. hash-malili-tok
        'John came'   2pN-run-Past
                                                'you all ran'
                                                (Payne 1982: 354)

Many different types of theories have been proposed within the GB framework to account for the differences between ergative and accusative languages. The earliest analyses within this framework (de Rijk 1966 and Marantz 1984) proposed that the projection of arguments in transitive clauses was reversed in ergative and accusative languages. In accusative languages, following standard assumptions of syntactic structure, the A argument is base-generated as the daughter of S/IP, with O appearing in the VP. In ergative languages, on the other hand, it was claimed that O is the daughter of S/IP, and the A is generated within the VP. The grouping together of S and O with respect to Case and agreement results from their appearing in the same position, i.e., as immediate constituents of S. De Rijk (1966) attributed the difference in argument projection to the selectional restrictions of the transitive verb. For Marantz (1984), the reversal of A and O in ergative and accusative languages occurs at the level of corres-

pondence between semantic roles (Agent/Patient) and grammatical relations (subject /object). Although Marantz assumed that Case assignment is identical in the two language types, the opposite d-structure representation of Agent and Patient as subject or object results in different NPs receiving the same Case. For both de Rijk and Marantz, an intransitive clause has the same d-structure in both language types.

In the next development of comparative theories (e.g. Levin and Massam 1985, Marantz 1991), identical d-structure representations are proposed for both transitive and intransitive clauses in the two types of languages. This has the advantage over the previous theories of maintaining Baker's (1988) UTAH or Perlmutter and Postal's (1984) Universal Alignment Hypothesis. In contrast to Marantz's (1984) analysis, where ergative and accusative languages differ in their d-structures but not Case-assigning mechanisms, in Levin and Massam (1985) and Marantz (1991) the two types of languages have the same d-structure, but different methods of Case assignment. For Levin and Massam, transitive arguments are assigned Case in the same way in the two language types: the A in Spec IP receives Case (ergative or nominative) from I, and O receives absolutive or accusative Case from V.[3] Differences appear in the intransitive paradigm, when there is only one argument (S in Spec IP) receiving Case. In ergative languages S is assigned absolutive Case by V, while in accusative languages S is assigned nominative Case by I.[4]

Marantz's (1991) analysis makes opposite claims regarding the Case mechanisms in ergative and accusative languages. For Marantz, Case-marking in intransitive clauses is the same in the two language types, while differences arise in the transitive paradigm. His proposal is that in ergative languages the morphological realization of the Case of V+I (ergative) is assigned upward to A, while in accusative languages the accusative Case of V+I is assigned downward to O. In both ergative and accusative languages, nominative Case is assigned upward to S in intransitive clauses.

The most recent analyses investigating the ergative/accusative distinction have the advantages of Levin and Massam (1985) and Marantz (1991) in assuming similar d-structure representations in the two language types, while also maintaining an association between Case and structural position. This is possible because of developments in GB theory that permit arguments to move from their base-generated positions within the VP to other projections where they are assigned Case. Analyses such as Mahajan (1990), Bobaljik (1992), Campana (1992), Chomsky (1993), Murasugi (1992), Bittner (1994), O'Herin (1995) and Bittner and Hale (1996) all assume that universally S, A and O are base-generated in the VP, and that it is the movement of NPs to Case positions that distinguishes ergative from accusative languages. In an accusative language, S and A move to the same position, while in an ergative language, it is S and O that appear in the same Case position. These

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(3) Note that in Levin and Massam's analysis, nominative and absolutive are different Cases, the former assigned by I, and the latter assigned by V.

(4) S receives the obligatory Case associated with the language type. Levin and Massam propose a Case Parameter that determines the obligatory Case: the Case of V in ergative languages, and the Case of I in accusative languages.

analyses may be classified into two categories: (i) those that assume that in ergative languages A raises higher than O, and (ii) those that assume that O in these languages raises higher than A. In the first category are analyses such as Bobaljik (1992) and Chomsky (1993), who claim that transitive clauses in both ergative and accusative languages have the "Crossing Paths" structure shown in (6a), where A raises to the higher functional projection, AgrSP, and O raises to the lower projection, AgrOP (see also Albizu this volume).[5]

(6)
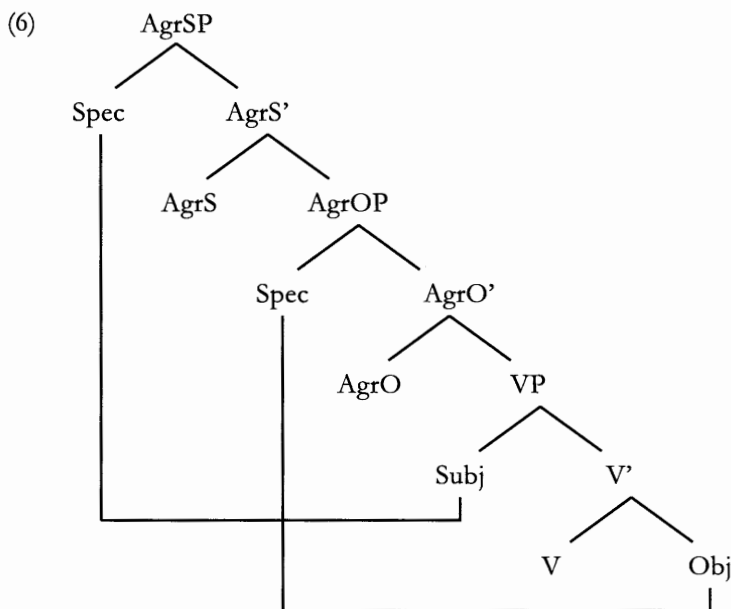
For Bobaljik and Chomsky, the difference between the two types of languages is manifested in the intransitive paradigm. In an accusative language, S raises to Spec AgrSP, the same position as A (see (7a)). However, in an ergative language, S raises only to Spec AgrOP, as_shown in (7b).

The theories in the second category (e.g. Mahajan 1990, Campana 1992, Murasugi 1992, Bittner 1994, O'Herin 1995 and Bittner and Hale 1996) claim that it is in the *transitive* paradigm that ergative and accusative languages differ. In an intransitive clause the S argument raises to Spec AgrSP (or the equivalent) in both types of languages (as in (7a)). In transitive clauses, however, the A and O arguments appear in different positions in the two language types. In an accusative language A appears higher than O, while in an ergative language, O is in a position higher than A. The various theories in this category differ in the details of syntactic structure and assumptions about NP movement. Bittner (1994) and Bittner and Hale (1996), for example, assume that the A argument remains in the VP, and have O raising to the one functional category projecting from the VP. In Campana (1992)

(5) The structures in (6) and (7) are simplified versions of those found in Bobaljik (1992) and Chomsky (1993). More specifically, they do not show the TP projection.

and Murasugi (1992) the A and O arguments both raise to functional projections outside the VP. What all the theories have in common is their claim that in ergative languages O is higher than A at some point in the derivation.

(7) a.

```
                    AgrSP
                   /     \
                Spec      AgrS'
                 |       /    \
                 |    AgrS     AgrOP
                 |           /      \
                 |        Spec       AgrO'
                 |                  /     \
                 |               AgrO      VP
                 |                        /   \
                 |                     Subj    V'
                 |_____|      |
                                               V
```

(7) b.

```
                    AgrSP
                   /     \
                Spec      AgrS'
                         /    \
                      AgrS     AgrOP
                              /      \
                           Spec       AgrO'
                            |        /     \
                            |     AgrO      VP
                            |              /   \
                            |           Subj    V'
                            |_____|       |
                                                 V
```
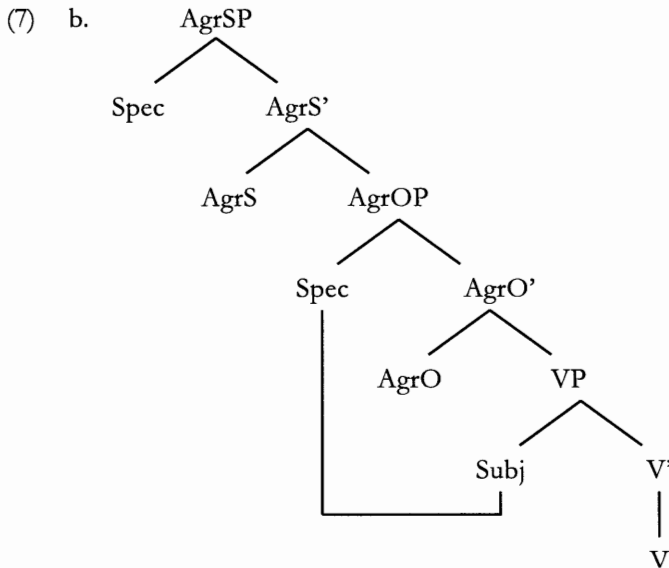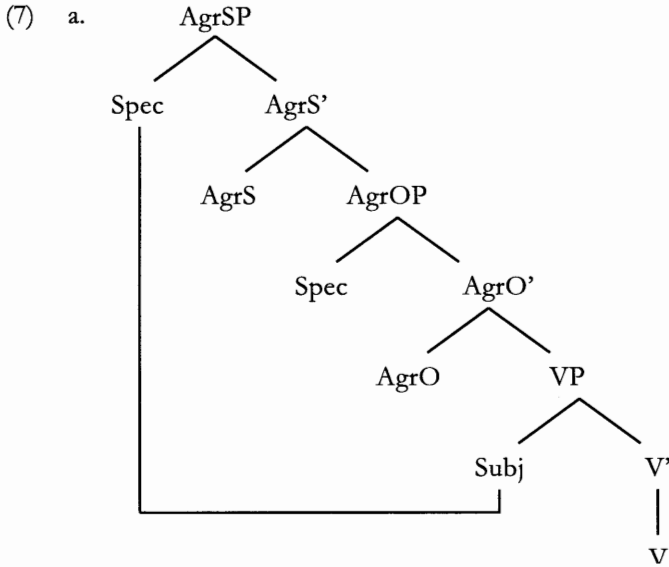
The analysis in the present paper belongs to this second category of theories. In both ergative and accusative languages, the A and O arguments are generated in the same positions within the VP. Following Chomsky (1991), I assume that both arguments must

raise out of the VP to the Spec of functional projections in order to fulfill Case requirements. In accusative languages, as in standard analyses of NP movement, the NPs exhibit Crossing Paths movement, as shown in (6a) above. The central claim of this paper is that in ergative languages, the movement of the A and O arguments is reversed: A raises to the lower functional projection, while O raises to the higher one. This type of movement, called "Nested Paths", is shown in (8) (although as discussed in section 2 below, I assume different category labels for the functional projections).

(8)   Nested Paths

```
                AgrSP
               /     \
          Spec        AgrS'
          |          /     \
          |       AgrS       AgrOP
          |               /       \
          |           Spec         AgrO'
          |           |           /     \
          |           |        AgrO       VP
          |           |                 /    \
          |           |              Subj     V'
          |           |_____|     /   \
          |                                 V      Obj
          |_____|
```
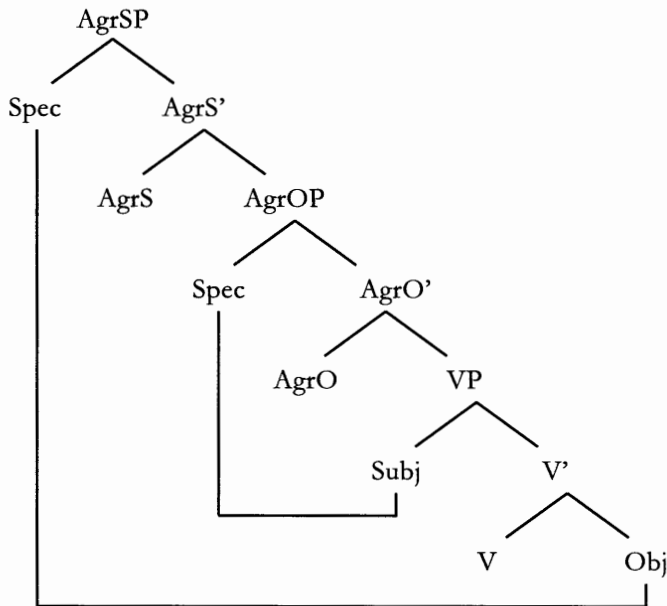
Languages that exhibit this type of movement, with O higher than A, will be referred to as *syntactically ergative* languages. In section 3 below I provide evidence from verbal agreement, scope and participial relatives for Nested Paths movement in syntactically ergative languages such as Inuit and Dyirbal.

The analysis in this paper does not attempt to account for all languages that exhibit ergativity in their Case and/or agreement systems. Languages vary in the degree to which they exhibit ergative properties, making it difficult for one theory to accommodate all such languages. Theories of ergativity within the generative framework have generally focused on a particular ergative language or particular type of ergative language. For example, Johns (1987, 1992), Bok-Bennema (1991) and Bittner (1994) focus on Inuit, and O'Herin (1985), on Abaza, two syntactically ergative languages. Marantz (1984), Campana (1992), Murasugi (1992) and Bittner and Hale (1996) investigate several syntactically ergative languages including Inuit, Dyirbal and Mayan. Two analyses of morphologically ergative languages (i.e., those that appear to have no *syntactic* properties that group together S and O) are presented in Laka (1993) for Basque, and Levin and Massam (1985) for Niuean.

Languages that exhibit split ergativity based on tense and aspect (e.g., Georgian and Hindi) are investigated in Marantz (1991). Jelinek (1993) and Jelinek and Demers (1994) present an analysis of Straits Salish, which exhibits split ergativity along a person hierarchy. The Papuan language Yimas, another language with a split ergative system based on person, is examined in Phillips (1993). Following in this tradition, the present paper addresses only a particular class of ergative languages, i.e., syntactically ergative languages such as Inuit and Dyirbal, where O appears in a position higher than A.

The organization of the paper is as follows. In section 2 I introduce a structure for clauses that differs from Chomsky (1991, 1993) in the functional projections associated with Case and agreement. In section 3 I provide arguments from verbal agreement, scope and participial relatives in support of the Nested Paths structure in (8) for ergative languages such as Dyirbal, Inuit and Mayan. I provide a theoretical account of Nested Paths in section 4, based on the economy principle of Shortest Movement. I discuss Crossing Paths in accusative languages in section 5, claiming that this type of movement results from the Case-assigning properties of the verb. An ergative parameter that distinguishes ergative from accusative languages is presented. In section 6 I discuss Superiority in accusative languages, which exhibits Nested Paths movement as Case is not of relevance.

2. The Tr Projection

Shown in (9) is the structure I propose for clauses universally.

(9)
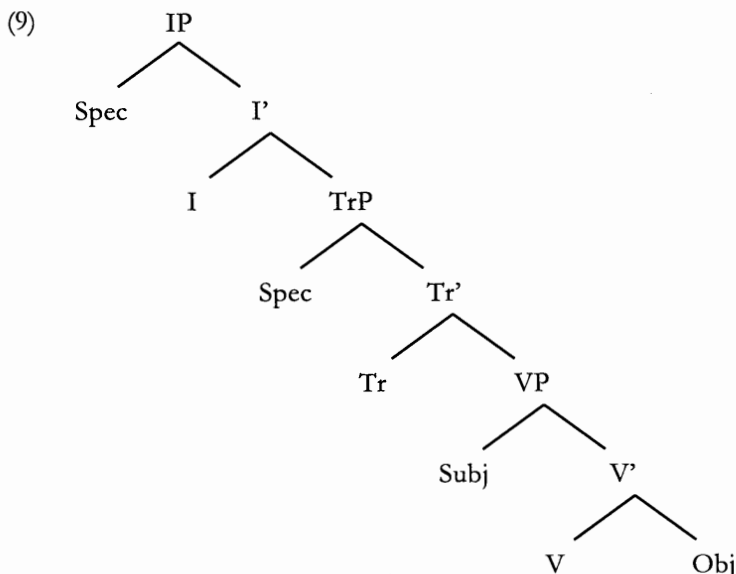
I assume the VP-internal subject hypothesis, where subjects are generated within a maximal VP projection (see Fukui 1986, Fukui and Speas 1986, Kitagawa

1986, Kuroda 1986, and Koopman and Sportiche 1987, among others). I also adopt Chomsky's (1991, 1993) proposal that both subject and object Case and agreement involve a Spec-head relation between a functional head and its specifier. This entails that the subject and object NPs in the VP must raise to the specifier positions of the functional categories to satisfy Case and agreement requirements.

The two functional projections associated with Case and agreement are IP and Tr(ansitivity)P. Unlike the proposals in Pollock (1989) and Chomsky (1991, 1993), I do not assume that an agreement node heads its own projection. Rather, I return to Chomsky's (1981) notion of the "dualheadedness" of Infl that was standardly assumed until Pollock's (1989) proposal. In the traditional analysis, Infl consists of the feature [Tense], and Agr features for person, gender, number, etc. I follow Halle and Marantz (1993) in assuming that Agrs are adjoined to functional heads.[6]

Pollock (1989) proposed that IP be separated into two projections, TP and AgrP, reflecting the dual nature of this inflectional category. He provided evidence from verb movement in French and English that a structural position between VP and IP (i.e., AgrP) was necessary. However, as noted by Chomsky (1991), this AgrP projection could be analyzed as the category relating to object agreement, unifying Pollock's structural requirements for such a position, and Kayne's (1989) proposal of an object agreement position for French past participles. With Agr associated with the object, there is no need for two inflectional projections for the subject. Pollock's TP, then, can remain the locus of subject Case and agreement, as was the case with IP in earlier systems.

Parallel to the dualheadedness of tense and agreement, I propose that object agreement is also associated with a functional head, Tr(ansitivity). This TrP projection is similar to Chomsky's AgrOP in that it is associated with object Case and agreement, but rather than being a projection of agreement, it is headed by a feature of the verb.[7] Unlike tense, which has semantic content, the notion of transitivity proposed here is not semantic, but strictly structural. The [trans] feature is the structural realization of the number of direct arguments in the VP. A verb with two arguments projects [+trans] Tr, while a verb with one argument projects a [−trans] Tr. Whether the one argument has object-like properties, as with unaccusative or passive verbs, or subject-like properties as with unergative verbs, is not of importance.[8]

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(6) This means that in languages which may be lacking Agr, such as Chinese and Japanese, only the adjoined Agr head is absent, and not an entire (AgrP) functional projection.

(7) Jelinek (1993) and Jelinek and Demers (1994) provide evidence from Straits Salish for a functional category involving a transitivizing head. In Inuit, a morpheme indicating transitivity is affixed to verbs: -*u* for intransitive verbs, and -*a* for transitive verbs.

(8) There is also a semantic notion of transitivity, which is a lexical, and not syntactic, property of the verb. Hopper and Thompson (1980), for example, claim that transitivity is associated with several components, all concerned with the effectiveness with which an action takes place, e.g., the telicity and punctuality of the verb, the volitionality and agency of the subject, realis or irrealis mode, and the degree of affectedness and individuation of the object. It is not clear how such properties are captured syntactically, especially in terms of satisfying the Case requirements of the object, which is the role of Tr.

3. Nested Paths in Syntactically Ergative Languages

Inuit, Dyirbal, Mayan and Abaza are all languages that exhibit an ergative system of Case or agreement. In this section I provide evidence that such languages are syntactically ergative, that is, they exhibit Nested Paths movement. I discuss various phenomena such as the order of verbal agreement morphemes, scope facts and participial relatives that support an analysis where the O argument raises to a position higher than A in ergative languages (see (10a)), and to a lower position in accusative languages (see (10b)). (10c) illustrates where the S argument appears in both ergative and accusative languages.

(10)   a.   Crossing Paths: Accusative Languages

```
              IP
            /    \
         Spec     I'
                /    \
              I       TrP
                    /    \
                 Spec     Tr'
                        /    \
                      Tr      VP
                            /    \
                         Subj     V'
                                /    \
                              V       Obj
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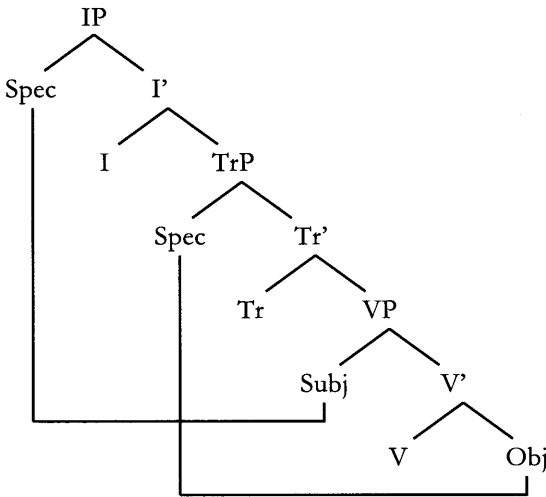
   b.   Nested Paths: Ergative Languages

```
              IP
            /    \
         Spec     I'
                /    \
              I       TrP
                    /    \
                 Spec     Tr'
                        /    \
                      Tr      VP
                            /    \
                         Subj     V'
                                /    \
                              V       Obj
```
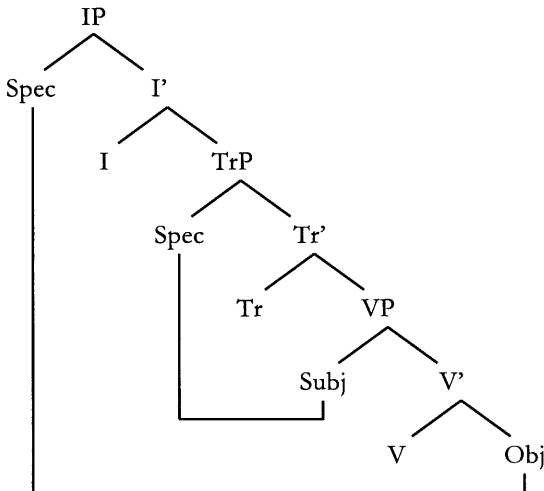
c. Intransitive Clauses: Ergative and Accusative Languages

```
                    IP
                  /    \
              Spec      I'
               |       /  \
               |      I    TrP
               |          /   \
               |       Spec    Tr'
               |             /    \
               |           Tr      VP
               |                  /   \
               |               Subj    V'
               |_____|       |
                                       V
```
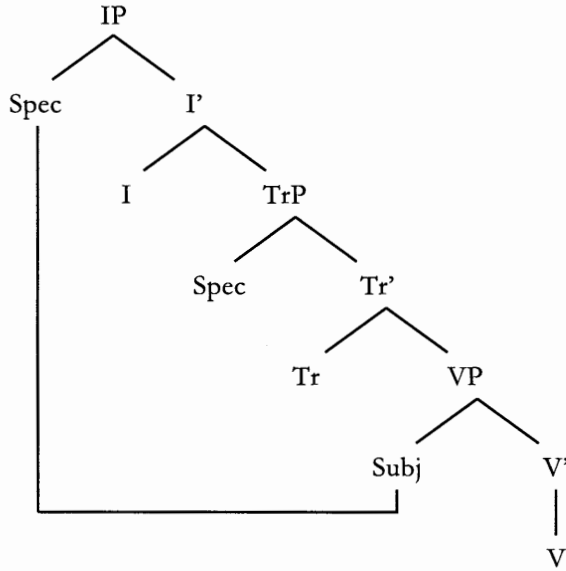
The positioning of the arguments in (10a-c) is reflected in the Case that appears on the NPs. I assigns nominative Case to the argument in Spec IP, which in an ergative language corresponds to S and O. The A argument is assigned ergative Case in Spec TrP. In an accusative language, I assigns nominative Case to S and A, and Tr assigns accusative Case to the O in its Spec. The names "nominative", "absolutive", "accusative" and "ergative" are simply labels used to identify the Cases associated with I and Tr in the two types of languages. I is associated with the unmarked Case in both language types, and Tr, with the marked Case. The unmarked Case is the form generally used for citation, and the one most likely to be morphologically null. These properties are shared by the nominative in accusative languages, and the absolutive in ergative languages.[9] In constrast, accusative and ergative Case are usually the marked Cases morphologically. In this paper I refer to both nominative and absolutive as simply "nominative". However, in order to distinguish between the two types of languages, I refer to the marked Case as either "accusative" or "ergative".[10]

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(9) See Dixon (1979, 1994), Bittner (1991) and Blake (1994) for further discussion of the unmarked status of nominative and absolutive Case.

(10) Since ergativity is most commonly found in the Case/agreement system, which may be considered to be morphological properties, it has been claimed that, except in a few rare languages such as Dyirbal, ergativity does not extend beyond the morphology to the syntax (see Anderson 1976, Comrie 1978, Dixon 1979, Levin 1983 and Marantz 1984 for discussion). It is well-known that in Dyirbal, the grouping together of S and O is not limited to Case and agreement, but is found in syntactic structures such as topic chaining and purposive clauses as well (see Dixon 1972, 1979, 1991). The evidence from ergative languages presented in sections 3.1 to 3.3 below shows that in the languages discussed (e.g. Inuit, Mayan and Dyirbal), the grouping together of S and O has syntactic consequences. Such evidence provides support for the analysis presented here that ergativity in such languages is based on a syntactic phenomenon, Move α.

3.1. Order of Agreement Morphemes

In languages that exhibit double verbal agreement in transitive clauses, the order of the transitive subject and object agreement morphemes are reversed in ergative and accusative languages. As observed by Bittner (1994), Campana (1992), Murasugi (1992) and O'Herin (1995), in an ergative language A agreement is closer to the verb than O agreement, while in an accusative language O agreement is closer than A agreement. Examples from two ergative languages, Inuktitut (Inuit) and Tzutujil (Mayan), are shown in (11) and (12). In these examples, A agreement appears closest to the verb.

(11) *Inuktitut*
malik-v-a-*a-nga*
follow-Ind-Tr-*3sA-1sO*
'he/she followed me'

(12) *Tzutujil*
n-*e7-a*-kamsa-aj
Incomp-*3pO-2sA*-kill-suff
'you kill them'

(Dayley 1985: 83)

Other ergative languages exhibiting the same order of agreement morphemes are Warlpiri (Hale 1983), the Caucasian languages Abaza (O'Herin 1995), Archi (Kibrik 1979) and Abkhaz (Hewitt 1979), and other Mayan languages such as Mam (England 1983) and Tzotzil (Aissen 1987).

In the accusative examples in (13) and (14), from Chichewa (Bantu) and Chickasaw (Muskogean), respectively, O agreement is closer to the verb than A agreement.

(13) *Chichewa*
njûchi *zi*-ná-*wá*-lum-a   alenje
bees   *3pA*-Past-*3pO*-bite-Ind hunters
'the bees bit them, the hunters'
(Bresnan and Mchombo 1987: 744)

(14) *Chickasaw*
has-sa-shoo-tok
2pA-1sO-hug-Past
'you all hugged me'
(Payne 1982: 33)

Other accusative languages following this pattern include additional Bantu languages such as Setawana (Demuth and Johnson 1989) and Kiyaka (Kidima 1987), Pawnee (Caddoan; Parks 1976), Yavapai (Yuman; Kendall 1976), Tuscarora (Iroquoian; Williams 1976), Kiowa (South Plains; Watkins 1984), Pipil (Nahua; Campbell 1985), and Daga (Papua New Guinea; Murane 1974).

Agreement is a relation between a bundle of θ-features under an Agr node and an NP in the specifier position associated with Agr. It involves a Spec-head relation, regardless of whether the Agr node is part of a functional head such as Infl, as in the traditional analysis of Chomsky (1981) and also assumed here, or heads its own projection (as in Pollock 1989, Chomsky 1991). Verbal agreement involves head-to-head movement of the verb to Tr, and subsequent raising of the V+Tr complex to I. The order of subject and object agreement morphemes on the verb reflects the order in which agreement is triggered as the verb moves from one functional head to the next.[11] Let us assume some version of Baker's (1985) Mirror Principle (also

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(11) Within the "checking theory" of Chomsky (1993), where the verb is base-generated with agreement features, the order in which the features are checked would correlate with the hierarchical structure of the corresponding NPs.

Gerdts' 1981 Satellite Principle), where the order of morphemes correlates with syntactic derivations.

(15)   *Mirror Principle* (Baker 1985: 375)
       Morphological derivations must directly reflect syntactic derivations (and vice versa).

Agreement is triggered first by the NP in Spec TrP when the verb raises to Tr, and then by the NP in Spec IP when the V+Tr complex raises and adjoins to I.

The different patterns of verbal agreement in ergative and accusative languages result from different NPs appearing in Spec TrP and Spec IP in the two language types. In both types, the agreement associated with Tr (i.e., accusative/ergative) is closer to the verb than the nominative agreement of I. In an ergative language, agreement occurs first with the A argument in Spec TrP, and then the O in Spec IP, resulting in A agreement appearing closer to the verb. In an accusative language, agreement with the O in Spec TrP precedes agreement with the A in Spec IP, and thus O agreement morphology appears closer to the verb than that of the A.

Although the examples in (11) to (14) show Tr agreement linearly closer to the verb than I agreement, it is the hierarchical notion of "closer" rather than linear order that is of importance. Following Baker (1985), Marantz (1988), Noyer (1991) and Speas (1990), among others, I assume that the actual linear order in which elements are realized at PF is not a syntactic property, but is established in the mapping from syntax to PF by language-specific rules. The relevant hierarchical structure is shown in (16), where Tr agreement is structurally closer to V than I agreement.

(16)   [V Agr_{Tr}] Agr_I

The Agr morphemes in (16) may be linearly realized in various ways, as illustrated in (17).

(17)   a. $V\text{-}Agr_{Tr}\text{-}Agr_I$ c. $Agr_I\text{-}V\text{-}Agr_{Tr}$
       b. $Agr_I\text{-}Agr_{Tr}\text{-}V$ d. $Agr_{Tr}\text{-}V\text{-}Agr_I$

The Inuktitut example in (11) above has the pattern of (17a), while (12) to (14) have the pattern shown in (17b).[12]

In languages where the A and O morphemes appear on different sides of the verb, as in (17c-d), it may appear that both morphemes are equally close to the verb. Accusative languages of Papua New Guinea such as Tauya, Fore and Manam exhibit this type of agreement pattern. Shown in (18a) and (18b) are examples from Manam and Fore, respectively. In (18a) A agreement is a prefix, and O agreement is a suffix (as in (17c)). In (18b), the affixal properties of the morphemes are reversed: the A morpheme is a suffix, and the O morpheme is a prefix (see (17d)).

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(12) For verbal agreement, I do not adopt Kayne's (1994) proposals that linear order directly reflects hierarchical structure, and that adjunction is always to the left. It is not clear how Kayne's proposal would accommodate the different patterns of agreement shown in (17b-d) above, which appear to be derived from similar syntactic structures, and all involve right-adjunction at some point in the derivation. It may be necessary to distinguish between linear order in syntax (e.g., word order in sentences and the placement of clitics relative to the verb) and the order of agreement morphemes on the verb, as in (17).

(18) a. tamóata bóro í-te-di   b. a-ka-y-e
       man   pigs 3sA.Real-see-3pO   3sO-see-3sA-Ind
       'the man saw the pigs'   'he sees it'
       (Lichtenberk 1983: 119)   (Scott 1978: 53)

Although from the above examples it cannot be determined whether or not the A and O affixes are hierarchically ordered, other examples in the language provide evidence that a hierarchy does exist. In both Manam and Fore, various elements may appear between the verb and A agreement marker, but not between the verb and O marker, indicating that V and O form a closer unit than V and A. In the Manam example in (19a), the classificatory prefix *ʔara* indicating that the action was performed with the teeth (from *ʔarat* 'bite') appears between the verb and A agreement. In (19b), from Fore, the aspect marker *wae* following the verb indicates totality.

(19) a. móli   i-ʔara-sísiʔ-i   b. a-ka-wae-y-e
       orange 3sA.Real-"bite"-peel-3sO   3sO-see-Total-3sA-Ind
       'he peeled the orange (with his teeth)'   'he sees it all'
       (Lichtenberk 1983: 215)   (Scott 1978: 53)

The agreement morphemes in these languages thus exhibit the same hierarchical structure as those in other accusative languages, although with different linear orderings.

In an *ergative* language where agreement appears on both sides of the verb, the hierarchical structure in (16) predicts that A agreement is closer to the verb than O agreement. An example of such a language is Tojolabal, a Mayan language. In (20a), it is difficult to determine the structure of the A and O agreement morphemes. However, elements such as voice and mood may appear between the verb and O agreement (see (20b)), while nothing may intervene between the verb and A agreement.

(20) a. 7oh   h-mak'-Ø-eh
       Fut.prog 1sA-hit-3sO-Terminal
       'I am going to hit him'   (Furbee-Losee 1976: 135)
     b. Ø-s-moh-t-ay-on   ha   Hwan-ih
       Compl-3sA-companion-Tr-Imperf-1sO Det John-Loc
       'John accompanied me'   (Furbee-Losee 1976: 139)

This asymmetry with agreement morphemes on both sides of the verb demonstrates that adverbial-like elements are only adjoined to projections higher than TrP, leading to the adjacency of the verb and Tr agreement. In accusative languages the verb is adjacent to the object agreement morpheme, and in ergative languages, it is adjacent to the subject agreement morpheme.

I have so far limited the examples of verbal agreement to instances where there is a direct relation between syntactic agreement positions and agreement morphemes. That is, each movement to a functional head is reflected by an agreement morpheme on the verb, and the order of morphemes reflects exactly the order of movement. There are several cases, however, where the actual mapping from the syntax to PF may deviate from this unmarked, one-to-one correspondence. The

mapping may undergo processes such as fusion, fission and merger, which alter the underlying string of morphemes. Fusion takes two heads and fuses them into a single head, fission involves the splitting off of a specific feature into a separate morpheme, and merger joins two adjacent nodes under a single node.[13]

Consider the fusion of two agreement morphemes, resulting in a single portmanteau form. Shown in (21) are examples of fused morphemes, where it is not possible to determine the underlying order of A and O agreement.

(21)   *Inuktitut (Inuit)*
    a. malik-p-a-ra   b. malik-p-a-tka
        see-Ind-Tr-1sA.3sO   see-Ind-Tr-1sA.3pO
        'I followed him/her'   'I followed them'

However, there are other examples in the language, such as (11) above, that do not involve a portmanteau morpheme. Inuit being an ergative language, in (11) A agreement appears closer to the verb than O agreement. Although there do appear to be languages in which all transitive agreement morphemes are portmanteau, e.g. Apalai (Carib; Koehn and Koehn 1986), it is more common for only part of the agreement paradigm to involve portmanteau forms.

Other apparent counterexamples to the hierarchical structure in (16) involve languages that appear to have both ergative and accusative patterns of agreement, as examples of both A and O agreement appearing closest to the verb are found. Two languages exhibiting this behaviour are Western Desert (Australian) (see (22)) and Dakota (Siouan), shown in (23). These forms are discussed in Noyer (1992) as examples of the "Placing Problem".

(22)   *Western Desert*
    a. pu-ŋku-rna-nta   b. pu-ŋku-rni-n
        hit-Fut-1sA-2sO   hit-Fut-1sO-2sA
        'I will hit you'   'you will hit me'
                             (Dixon 1980: 362)

(23)   *Dakota*
    a. u:-ni-kte   b. u:-ya-kte   (Schwartz 1979)
        1pA-2sO-kill   1pO-2sA-kill
        'we killed you'   'you killed us'

In both (22) and (23), the agreement morpheme corresponding to first person precedes that of second person, regardless of the grammatical function associated with the morphemes. The linear order of agreement morphemes is thus determined by a person hierarchy that overrides the unmarked ordering of morphemes (see Albizu this volume for related discussion). Similar person hierarchies are found in Mangarayi (Pama-Nyungan; Merlan 1982) and Hixkaryana (Carib; Alexander 1989).

Finally, the opposite order of agreement morphemes to the expected pattern is found in the accusative Athapaskan languages, where A agreement appears closer to

(13) For a full discussion of these processes, see Bonet (1991), Halle and Marantz (1993), Marantz (1991) and Noyer (1992).

the verb than O agreement (see Kari 1989, Rice 1989, Speas 1990, 1991a, 1991b). However, it is claimed in Speas (1990, 1991a, 1991b) that the hierarchical structure of the four inflectional categories AgrO, Aspect, Tense and AgrS (see (24)) is the same as in other accusative languages, with Tense taking scope over Aspect, and object agreement closer to the verb than subject agreement:

(24)   (clitics) AgrO Aspect Tense AgrS   [verb stem]

Although the internal order of the inflectional affixes in Navajo reflects their scope order, the linear order with respect to the verb stem is reversed. Speas proposes various analyses for the apparent counterexample to the Mirror Principle, suggesting that the inflectional morphemes are phonological infixes (Speas 1990), that the morphemes are lowered onto the verb rather than the the verb undergoing head-to-head raising (Speas 1991a), and that inflectional morphemes can be added in the lexicon (Speas 1991b). The important issue is that regardless of the actual linear order that is phonologically realized, the syntactic facts support a structure where object agreement is lower than subject agreement.[14]

3.2. Scope of Quantifiers

In this section I discuss differences in scope found in accusative and ergative languages. In an ergative language such as Inuit, the A argument behaves like an O argument in an accusative language, taking both wide and narrow scope. Similarly, the O argument in Inuit behaves like the A argument in English or Polish, taking only wide scope. Bittner (1994) and Bittner and Hale (1996) claim that cross-linguistic variation in scope options reflects a difference in structural representation rather than a difference in semantic rules. Since scope is determined by c-command relations, arguments that take narrow scope with respect to sentential operators must be within the c-command domain of the operator, while those with only wide scope are outside its domain. In the following example from English, the O QP remains below the sentential operator at s-structure, giving the default reading of narrow scope (25i). Wide scope is also possible, since English is a language that has Quantifier Raising at LF (see (25ii)).

(25)   Mary hasn't seen one friend yet (at the party).

    (i)   Mary hasn't seen any friends yet.
    (ii)   There is one particular friend that Mary hasn't seen yet.

If, on the other hand, the QP appears above the sentential operator, it can only have a wide scope reading. In (26a) the O is topicalized to a position above

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(14) Of all the languages I have investigated, I have found only one that appears to be a true counterexample to (16): Seri, a language isolate with closest affiliation to the Yuman family (Marlett 1981, 1990). Seri is an accusative language whose agreement follows the pattern of ergative languages, with A agreement appearing closer to the verb than O agreement:

(i)   ma-ʔ-yo-aʔo
       2sO-1sA-Distal Realis-see
       'I saw you'   (Marlett 1990: 523)

negation, and in (26b) the QP is an A argument that raises to Spec IP.[15] In both cases only the wide scope interpretation is possible.

(26) a. One friend, Mary hasn't seen yet.
      b. One friend hasn't seen Mary yet.

As illustrated in (26b), an A argument that raises above negation to Spec IP can only have wide scope in English. Bittner (1991) claims this to be true in Polish as well.

(27) wszyyscy czterej   studenci   nie=by-l-i   na zebraniu
      all-Nom four-Nom students-Nom Neg=be-Past-3p.masc on meeting

      (i) *'Not all the four students were at the meeting'
      (ii) 'All the four students were absent from that meeting'
                                                                  (Bittner 1991: 1)

Bittner (1987, 1994) and Bittner and Hale (1996) observe that arguments in certain ergative languages exhibit scope relations different from those in accusative languages such as English and Polish. In West Greenlandic Inuit, for example, A arguments can take both wide and narrow scope with respect to sentential operators (see (28)), whereas in English and Polish they can only take wide scope (as shown in (26b) and (27) above).

(28)   atuartu-p   ataatsi-p Juuna uqaluqatigi-sima-nngi-la-a
       student-Erg one-Erg Juuna talk.to-Perf-Neg-Ind-3s.3s

       (ii) 'one student hasn't talked to Juuna (yet)' (narrow)
       (i) 'no student has talked to Juuna (yet)' (wide)   (Bittner 1994: 2)

O arguments, on the other hand, can only have wide scope in Inuit (see (29)), but may have both wide and narrow scope in English (see (25) above):

(29)   Juuna-p   atuagaq ataasiq tigu-sima-nngi-la-a
       Juuna-Erg book   one   get-Perf-Neg-Ind-3s.3s
       'there is a book which Juuna hasn't got (yet)'   (Bittner 1994: 2)

With respect to scope, then, the A argument in Inuit has the same default narrow scope reading as the O argument in an accusative language such as English or Polish. The A in (28), then, must be in a lower position than the negative operator. In (29), since the O argument can only have wide scope, it must appear higher than negation. These facts support a Nested Paths analysis of NP movement in Inuit, where A raises to Spec TrP, remaining below negation, while O raises to Spec IP, a position above negation.[16]

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(15) I am assuming that NegP occurs below IP, the projection to which the subject raises (see Pollock 1989).

(16) In other ergative languages such as Warlpiri and Hindi, the object remains in the VP at s-structure. Both narrow and wide scope readings are possible, although the default is narrow scope (see Bittner 1994 and Bittner and Hale 1996).

3.3. Participial Relative Clauses

A restriction on participial relative clauses has been observed in many languages, where only "subjects", i.e., S and A, may be relativized. The examples in (30) demonstrate this restriction in English: in (30a-b) S and A, respectively, are relativized, while the ungrammatical (30c) involves relativization of O.

(30)   a. the child sleeping on the mat
       b. the boy chasing butterflies
       c. *the butterflies the boy chasing

Similar facts have been observed with German, French, Russian, Polish and Turkish participial relative clauses, and with Hebrew "semi-relatives" (Keenan and Comrie 1977, Barker, Hankamer and Moore 1990, and Siloni 1995). Shown in (31) are Siloni's (1995: 463-4) examples from French (parentheses mine). In (31a-b) S and A are relativized, while in the ungrammatical (31c) O is being relativized.

(31)   a. [La fille arrivant aujourd'hui à Genève] est née   à Rome
          the girl arriving today   in Geneva was born in Rome
       b. [L'homme lisant le journal]   est un espion
          the man   reading the newspaper is a spy
       c. *[Le journal   l'homme lisant] est intéressant
          the newspaper the man reading is interesting

In Turkish, relativization involves the participial suffix *-En*, which is added to the verb when the noun being modified is a subject:[17]

(32)   a. mekteb-e gid-en   oğlan   b. kabağ-i   yi-yen   yılan
          school-Dat go-Part boy   squash-Acc eat-Part snake
          'the boy who goes to school'   'the snake that ate the squash'
          (Underhill 1972: 87)   (Barker, Hankamer and Moore
                                             1990: 22)

As in English and French, the object cannot be relativized in this manner (see (33)).[18]

(33)   *dana-lar gir-en   bostan
        calf-Pl enter-Part garden
        'the garden which calves entering'   (Underhill 1972: 95)

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(17) The situation is somewhat more complex, as not only subjects, but also constituents of the subject (e.g. possessor), and consitutents of the object when the subject is absent, may be modified with the subject participle. See Underhill (1972), Hankamer and Knecht (1976) and Barker, Hankamer and Moore (1990) for further details.

(18) When the modified noun is a direct object or oblique argument, a different participial affix, *-DIg*, is added to the verb:

(i)   a. yılan-ın   ye-diğ-i   kabak   b. oğlan-ın mekteb-in-e git-tiğ-i   adam
         snake-Gen eat-OAff-3s squash   boy-Gen school-3s-Dat go-OAff-3s man
         'the squash that the snake ate'   'the man whose school the boy goes to'
         (Barker, Hankamer and Moore 1990: 22)   (Underhill 1972: 89)

Siloni (1995) analyzes participial relative clauses as DPs, with the D° head taking an AgrP complement. According to her analysis, these relative clauses involve movement of a null operator that receives null Case from the [–Tense] Agr within the DP. The Spec of [–Tense] Agr is the landing site of the relativized argument (i.e., the null operator). In accusative languages such as English and French, it is S and A that raise to this Spec position, thereby restricting relativization to these arguments. In ergative languages, on the other hand, I have claimed that S and O raise to the equivalent Spec position. Therefore, relativization in participial relative clauses in ergative languages should be restricted to S and O, and not S and A as in accusative languages. This prediction is supported by the following data from Inuit and Dyirbal.

Shown in (34) are examples of relativization in West Greenlandic Inuit. (34a) illustrates relativization of O, and (34b), that of S. In the ungrammatical (34c), the A argument is being relativized.

(34)   *West Greenlandic Inuit*
        a. miiqqa-t Juuna-p   paari-sa-i   sinip-p-u-t
            child-Pl Juuna-Erg look.after-Rel[+tr]-3s.Pl sleep-Ind-Tr-3pN
            'the children that Juuna is looking after are sleeping'
        b. miiqqa-t sila-mi   pinnguar-tu-t   illar-p-u-t
            child-Pl outdoors-Loc play-Rel[–tr]-Pl laugh-Ind-Intr-2pN
            the children who are playing outdoors are laughing' (Bittner 1994: 55)
        c. *angut aallat tigu-sima-sa-a
            man   gun take-Perf-Rel[+tr]-3s.s
            'the man who took the gun'   (Bittner 1994: 58)

This restriction on relativization in Inuit has been widely discussed in the literature (e.g., Creider 1978, Woodbury 1977, 1985, Smith 1984, Johns 1987, 1992, and Bittner 1994). The analyses of Johns (1987, 1992) and Bittner (1994) are closest in spirit to the one presented here, with modification being restricted to the highest NP in the clause after movement.

In Dyirbal, as in Inuit, only S and O may be relativized (see (35a-b), respectively).

(35)   *Dyirbal*
        a. bay-i   yara   [miyanda-ŋu]   ba-ŋgu-n yibi-ŋgu   bura-n
            there(Nom)-m man(Nom) laugh-Rel(Nom) there-Erg-f woman-Erg see-Past
            'the woman saw the man who was laughing'   (Dixon 1991: 40)
        b. ŋada   nyina-nyu yugu-ŋga [yara-ŋgu nudi-ŋu-ra]
            I(Nom) sit-Nfut   tree-Loc man-Erg cut-Rel-Loc
            'I am sitting on the tree the man felled'   (Dixon 1972: 102)

Modifying an A argument is possible only when the verb is in the antipassive, which makes the A a derived S:

(36)   bay-i   yara   [jilwal-ŋa-ŋu   ba-gu-n   guda-gu] yanu
        there(Nom)-m man(Nom) kick-AP-Rel(Nom) there-Dat-f dog-Dat went
        'the man who kicked the dog went'   (Dixon 1991: 41)

Although the Dyirbal and Inuit relative clauses are not referred to in the literature as participial relative clauses, the consensus is that they involve a nominal construction. For example, relative clauses in Inuit have been described as involving a nominalized verb (Smith 1984), adjectival noun (Woodbury 1985), verbal noun (Johns 1987), and nominal relative (Bittner 1994).

One distinct nominal property of both Inuit and Dyirbal relative clauses is the presence of Case. The verbal element in the relative clause is marked with the same Case as that of the relative head. For example, in (35b) above the verb + relative marker *nudi-ηu* appears with locative Case, which is the Case of the relative head *yugu* 'tree'. The same is true in Inuit, as shown in (37) where both the verb in the relative clause and the relative head have ergative Case.

(37) nukappiaqqa-p qimmi-mut kii-sit-tu-p   uqaluttuar-aa
      boy-Erg   dog-All   bite-cause-Part-Erg tell.about-Ind.3sE.3sN
      'the boy bitten by the dog told about it'   (Fortescue 1984: 52)

Data from Inuit seem to support Siloni's proposal that participial relatives involve operator movement. As shown in (38), there is a subjacency violation when extracting from the relative clause.

(38) *Jaani-up quki-lauq-tanga   nanuq   [kia   taku-lauq-pauk]
       John-Erg shoot-Past-3s.3s polar bear [who.Erg see-Past.3s.3s.Interrog]
       'who did John shoot the polar bear that t saw'

The different restrictions on participial relative clauses in accusative and ergative languages provide further evidence for the central claim of this paper that accusative languages exhibit Crossing Paths, while ergative languages exhibit Nested Paths.

4. Shortest Movement and Nested Paths

In this section I provide a theoretical account of Nested Paths movement that applies the economy principle of Shortest Movement. The definition of Shortest Movement presented here is based on shortest distance between two points in a structure and the availability of elements for movements.

4.1. The Principle of Shortest Movement

I propose the following version of the Shortest Movement principle:

(39) *Principle of Shortest Movement*
      Movement must involve the closest available target X, and the closest available element Y.

(40) a. β is *closer* than α to γ in the structure [$\alpha...\beta...\gamma$] if α c-commands β, and β does not c-command α. β is *closer* than γ to α if β c-commands γ, and γ does not c-command β.

b. X is an *available target* for Y if X has not fulfilled its interpretational requirements.

c. Y is *available for movement* to X if Y has not fulfilled its interpretational requirements.

The target X, which is a position to which an element moves or adjoins, may be a head, an A-position, or an A'-position. For the distinction between A and A' positions I will use Mahajan's (1990: 10) particular definition of L and non L-related positions, respectively:[19]

(41)   *L-related positions:* Specifier and complement positions of a lexical item and functional heads projected from it. Within the clausal system it includes Spec and Complement positions of V, Agr and T.
       Non L-related positions: All other positions including Spec CP and adjunction positions.

In determining the element Y that moves to X, two factors are considered: distance and availability. By the Principle of Shortest Movement, Y must be the *closest* element to X, where the notion of "closest" is based on the number of c-commanding positions between X and Y. In (42), Y_1 is the closest element to the two potential targets X_1 and X_2.

(42)   ...
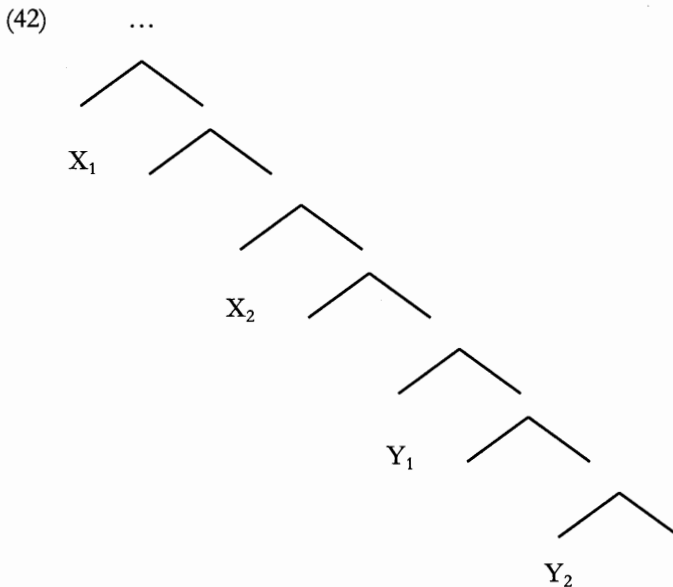
Similarly, X must be the closest target to Y, based on the same definition of closeness. In (42), X_2 is the closest target to both Y_1 and Y_2. The movement that

(19) For further discussion of A and A' positions, see Diesing (1990), Saito (1992) and Webelhuth (1989).

will satisfy the "closeness" requirement of both the target and the moved element in (42) is the one where Y_1 raises to X_2.

The following example involving super-raising demonstrates the Shortest Movement principle.

(43)   a. e_1 seems [e_2 is likely [John to leave]]
        b. e_1 seems [John$_i$ is likely [t_i to leave]]
        c. it seems [John$_i$ is likely [t_i to leave]]

As shown in (43a), there are two target positions, e_1 and e_2. The NP *John* is the closest element to both targets. However, *John* raises to e_2 and not e_1, since e_2 is the closest target to *John*.

Strict cyclicity follows naturally from this requirement that movement involve the closest available target. Raising to X_1 before X_2, which violates strict cyclicity, is a violation of Shortest Movement, as X_2 is a closer target than X_1. The effects of strict cyclicity may be defined as follows:[20]

(44)   *Strict Cyclicity*
        Lower targets are targetted before higher ones.

The term *targetted* is used in (44) rather than *filled*, since the actual filling of a specifier, for example, may occur anywhere in the derivation. Whether the actual movement occurs overtly or covertly does not affect cyclicity, as it is the selecting of elements for movement, rather than the actual movement to targets, that obeys strict cyclicity. For example, a (lower) Spec that is not filled until LF will still be targetted before a (higher) Spec that is filled at s-structure.

In addition to satisfying the closest distance requirement, X and Y must be *available*. The criterion for determining availability is that the element Y or target X not have fulfilled its interpretational requirements. The need to satisfy the principle of Full Interpretation (FI) is the fundamental motivation for Move-α. NP-movement, for example, occurs when an NP needs Case, a requirement on the Visibility Condition for interpretation at LF (Chomsky 1986b).[21] An NP is *available* for movement if its Case requirements have not been satisifed. Once the requirements have been met, the NP is no longer considered a potential "closer element" in determining shortest movement. In the super-raising example in (43) above, *John* cannot raise further to e_1 since, having fulfilled its Case requirements, it is no longer available for movement.

The target to which an element moves must also satisfy certain requirements for FI. The Spec of a Case-assigning functional head, for example, must be filled so that the head can assign its Case.[22] In (45a), [+tense] Infl has Case to assign. Since there

is no NP to move to Spec IP to receive the Case, *it* is inserted to satisfy the Case-assigning properties of the Infl (see (45b)).

(45)   a. e is raining   b. it is raining

It-insertion must be considered a last-resort strategy that is employed after all possible movements have taken place. Otherwise, in example (43) above, *it* could be inserted in e_2 to fulfill the requirements of the target, and *John* would move to e_1, resulting in the following ungrammatical case of super-raising.

(46)   *John$_i$ seems [it is likely [t$_i$ to leave]]

Once the requirements of a target have been satisfied it is no longer an available target, and therefore does not count as a potential landing site in determining the shortest possible moves.[23]

A'-movement is also motivated by the requirements of FI. The scope of a *wh*-element, for example, is determined by moving the element to Spec CP. Similarly, quantifiers must raise to an IP-adjoined position at LF to receive their scope (May 1985). Such elements are available for A'-movement if they have not yet received their scopal interpretations.

The targets of A'-movement must also satisfy certain requirements. For example, *wh*-movement to Spec CP for scopal reasons is motivated in part by the [+wh] feature in C, which requires a *wh*-element in its Spec (see Lasnik and Saito 1984, Rizzi 1990b, Epstein 1992, Watanabe 1993 and Zwart 1993, among others, for discussion).[24]

Head-to-head movement provides another instance of movement motivated by the requirements of the moved element as well as those of the target. Verb raising, for example, is required not only for agreement between a verb and the NP in a functional Spec position, but also by the requirements of functional affixes that require a morpheme to attach to.[25]

The definition of Shortest Movement provided in (39) does not consider the notion of appropriateness (cf. Jonas and Bobaljik 1993), that is, the matching of

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(i)   *The Saturation Principle*
       (a) Every grid position is discharged.
       (b) If X discharges a grid position in Y, then it discharges only one.

(23) Fulfilling the requirements of the target or moved element is not enough, however, to motivate all instances of NP movement. Consider the following examples, which all involve a [–tense] I:

(i)   a. I believe [$_{IP}$ John$_i$ to [$_{VP}$ t$_i$ have left]]   c. Jill wants [$_{IP}$ PRO$_i$ to [$_{VP}$ be informed t$_i$]]
       b. for [$_{IP}$ Mary$_i$ to [$_{VP}$ t$_i$ stay]] would be desirable

In the examples in (i), movement to the Spec of [–tense] I is not motivated by the Case requirements of I, as I has no Case to assign. Nor does movement occur to fulfill the Case requirements of the moved NPs, which do not receive Case in that position. Such examples demonstrate the need for some version of the Extended Projection Principle.

(24) However, A'-movement involving adjunction and not substitution, e.g. Quantifier Raising (May 1985) and Topicalization (Baltin 1982, Lasnik and Saito 1992, Watanabe 1993), appear to be motivated strictly by the requirements of the moved element, and not by any conditions on the target site.

(25) The dual requirement of the target (or its head) and the moved element is captured by Chomsky's (1993) system of feature *matching*, where the features of the head must match those of the moved element in its Spec.

moved elements and targets in terms of type (head, A or A'). It is not necessary to include type matching in the economy principle of Shortest Movement, as it will be subsumed under general restrictions on movement, most notably the notion of "structure preservation" proposed by Emonds (1976), and formulated in various ways by Baltin (1982) and Chomsky (1986a).

I claimed above that any element that has fulfilled its interpretational requirements, and thus is not available for movement or as a target, is no longer visible for calculating shortest movement. This entails that "satisfied" elements (e.g., filled specifiers) have a different status from "unsatisfied" ones (e.g. unfilled specifiers), in that the former count in determining shortest movement, whereas the latter do not. According to the interpretation presented here, Shortest Movement is not a fixed principle that permits only specific movements, such as crossing over one Spec position but not two (as in Chomsky 1993). Rather, the notion of Shortest Movement differs from structure to structure, depending on the targets available for substitution (or adjunction) and elements available for movement. Consider, for example, the two structures shown in (47). In (47a), movement of the object to Spec IP would be permitted even though it involves crossing two Spec positions, since Spec IP is the closest available target, and the object is the closest available NP. In (47b), however, the same movement is prohibited, as Spec TrP is the closest available target, and the subject is the closest available NP.

(47) a.

IP
├── e
└── I'
    ├── I
    └── TrP
        ├── Subj$_i$
        └── Tr'
            ├── Tr
            └── VP
                ├── t$_i$
                └── V'
                    ├── V
                    └── Obj

b.

IP
├── e
└── I'
    ├── I
    └── TrP
        ├── e
        └── Tr'
            ├── Tr
            └── VP
                ├── Subj
                └── V'
                    ├── V
                    └── Obj
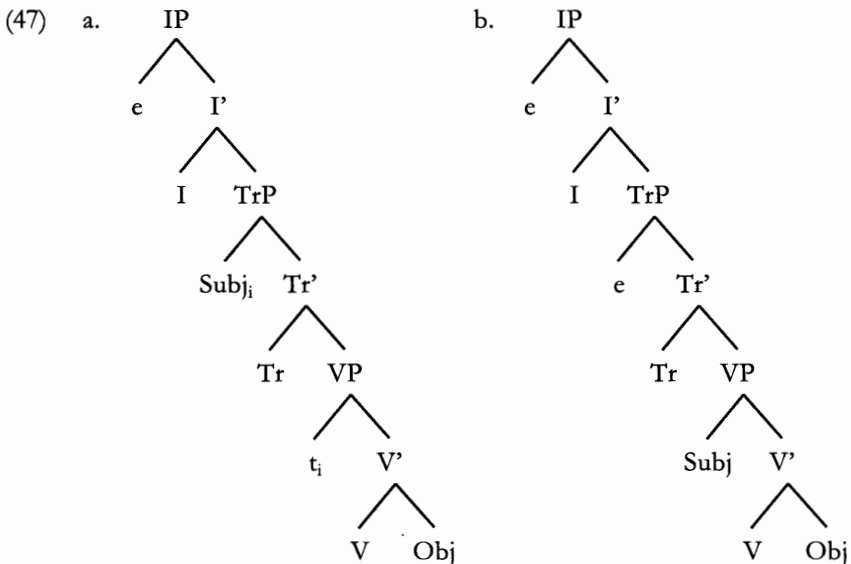
4.2. Shortest Movement and Nested Paths

Given the principle of Shortest Movement presented above, the resulting path of subject and object NPs in a transitive clause is Nested Paths (see (48)). The subject raises to the lower projection, TrP, while the object raises to the higher IP.

(48)   *Nested Paths*

```
                    IP
                  /    \
                NP      I'
                |      /  \
                |     I    TrP
                |        /    \
                |      NP      Tr'
                |      :      /   \
                |      :    Tr     VP
                |      :         /    \
                |      :       NP1    V'
                |      :_____|     /  \
                |                   V    NP2
                |_____|
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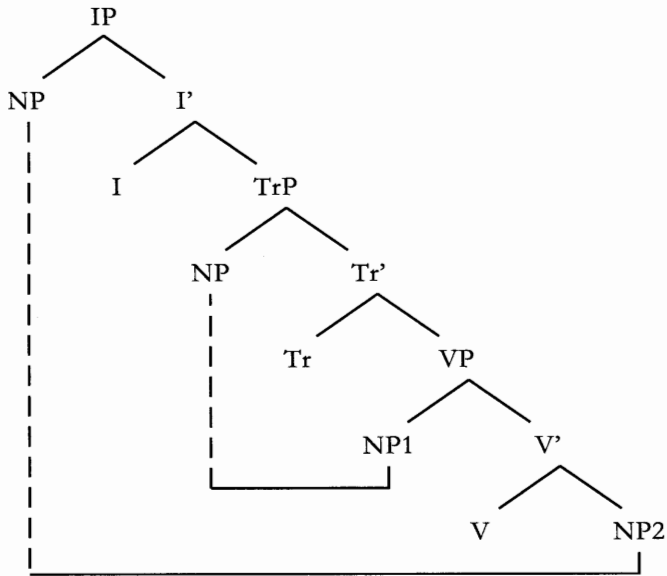
Let us consider the derivation of the Nested Paths structure in (48). The Spec of TrP is targetted first in the assignment of Case. The closest available NP to move into this position is the subject, NP1, which receives structural Case from Tr. Next, an NP is required to move into Spec IP. There is only one NP remaining, the object NP2, that is available for movement to this position. The subject in Spec TrP is actually closer in terms of actual distance, as it will not cross any Spec positions to reach Spec IP, whereas the object must cross two, Spec VP and Spec TrP. However, the subject is no longer available for movement, as it receives structural Case in Spec TrP.

In the following section I discuss how Crossing Paths in accusative languages is possible given the basic Nested Paths movement determined by the Shortest Movement principle. I propose that in accusative languages the Principle of Shortest Movement is overridden by two factors: (1) the assignment of Case to the object by the verb, and (2) a condition on Case assignment that restricts verb assignment to elements in Spec TrP.

5. Crossing Paths in Accusative Languages

There is a class of theories on ergativity which, in accordance with the investigation presented here, recognize that the transitive object appears in a higher syntactic position in ergative languages than in accusative languages. Such theories include those of Mahajan (1990), Bok-Bennema (1991), Campana (1992), Murasugi (1992), Bittner and Hale (1996), Bittner (1994) and O'Herin (1995). With the exception of Murasugi (1992) and O'Herin (1995), these theories propose that verbs in ergative languages do not assign Case, forcing the object to raise to a VP-external

Case position. In accusative languages, on the other hand, verbs may assign Case to their objects, permitting the object to remain in the VP.

In the present framework, the subject and object in both types of languages raise to a Case position outside the VP (i.e., Spec IP or Spec TrP). The difference in the position of the object in the two language types results from the different movement paths created by the NP arguments. Following previous theories, I attribute the difference between ergative and accusative languages to the Case-assigning property of the verb: in ergative languages, unlike in accusative languages, verbs do not assign Case. The head of TrP thus acts independently of the verb in assigning Case; that is, it can assign Case without the verb. In an accusative langua-ge, on the other hand, the verb is responsible for Case to the object. TrP simply provides a structural position for Case assignment, as structural Case is assigned in a Spec-head configuration (following Chomsky 1991). Since it is to the Spec TrP position that Case is assigned, this is the position to which the object must move, creating Crossing Paths.

One may ask why it is Spec TrP rather than Spec IP that provides the Case-assigning position. I propose that the Condition on Spec-Head Case Assignment given in (49) below prevents the verb from assigning Case to the object in Spec IP, creating Nested Paths in an accusative language. According to the condition, a head can assign Case to an NP that is either in its Spec, or in the next highest Spec position when it adjoins to the higher head. This condition is reminiscent of Travis' (1984) Head Movement Constraint and Rizzi's (1990a) Relativized Minimality in that $X°$ can assign Case to an NP in Spec YP only if there is no other head intervening between $X°$ and $Y°$. A verb, then, can assign Case to the NP in Spec TrP, which is the next highest Spec position, but not to Spec IP, which is two Specs away.

(49)   *Condition on Spec-Head Case Assignment*
       For an $X°$ to assign Case to an NP in a Spec-head configuration, the NP must be in:

       a. Spec XP, or
       b. Spec YP, where X is immediately dominated by Y after adjunction.

Consider the structures in (50a-b), with the object in Spec TrP and Spec IP, respectively.

(50)   a.   TrP   b.   IP
                /\   /\
            Obj   Tr'   Obj   I'
                   /\   /\
                 Tr   VP   I   TrP
                      /\   /\
                    V   Tr   Tr   I
                                                        /\
                                                      V   Tr
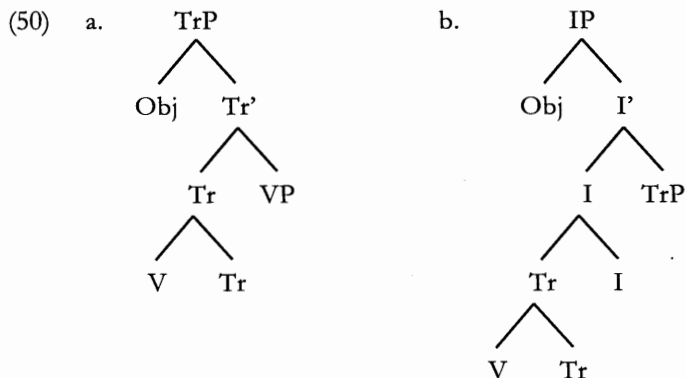
In (50a) V is immediately dominated by Tr, and is therefore in the proper configuration for Case assignment to Spec TrP. In (50b), however, I does not immediately dominate V. V is thus too deeply embedded in the adjunction structure to assign its Case to the object in Spec IP.[26]

The crucial consequence of the condition in (49) is that the verb, which assigns Case to its object, can assign this Case only when the object is in Spec TrP. In accusative languages, then, where transitive verbs assign Case to their objects, the object must raise only to Spec TrP if it is to receive the verb's Case. This movement results in Crossing Paths, as the subject raises to Spec IP in order to receive Case from I.

The difference in NP movement in the two types of languages may be formalized as follows:

(51)   *Ergative Parameter*
        Verbs in accusative languages assign Case to their object, forcing the
        object to raise to Spec TrP. Verbs in ergative languages do not assign
        Case, permitting the object to raise to Spec IP.

In accusative languages, the assignment of Case by the verb forces the object to raise to Spec TrP in order not to violate the Condition on Spec-Head Case Assignment presented in (49) above. In ergative languages, on the other hand, the condition does not apply to the verb, since the verb does not assign Case. With the subject and object thus equally available for movement, Shortest Movement determines that the subject raises to Spec TrP, and the object to Spec IP.

6. A'-Movement in Accusative Languages

In sections 4 and 5 above it was shown that the Principle of Shortest Movement creates Nested Paths, which is found in ergative languages. The Crossing Paths movement found in accusative languages was accounted for in section 5 by a condition on Case assignment that forced the object to raise to Spec TrP. In this section I discuss a particular case of A'-movement in accusative languages, Superiority. Since A'-movement involves NPs that already have Case, the condition on Case assignment proposed above should not apply. Shortest Movement would therefore predict Nested Paths, even in accusative languages. Superiority is a case of A'-movement that follows this prediction.

Superiority effects, first observed by Chomsky (1973), involves examples such as the following:

(26) Condition (49) is met in the following structure, where I assigns nominative Case directly to the NP in its Spec:

(i)   IP
          /   \
       Spec   I'
              /   \
             I   TrP
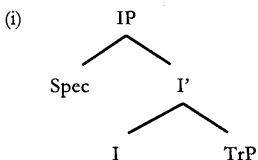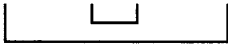
(52)　a.　who$_i$ did you persuade e$_i$ to read what?
　　　 b.　??what$_j$ did you persuade who(m) to read e$_j$?

(53)　a.　Mary asked [who$_i$ [e$_i$ read what]]?
　　　 b.　*Mary asked [what$_j$ [who read e$_j$]]?

In the (a) examples the subject *wh*-phrase is in Comp at s-structure, while the object *wh*-phrase remains *in situ*. In contrast, as shown in the (b) examples, the raising of the object *wh*-phrase at s-structure, with the subject remaining *in situ*, results in ungrammaticality.

Pesetsky (1982, 1987) proposes an account of superiority effects based on nested dependencies, i.e., the dependency paths between two *wh*-phrases and their traces.[27] The formal definition from Pesetsky (1987: 105) is given in (54).

(54)　*Nested Dependency Condition*
　　　 If two *wh*-trace dependencies overlap, one must contain the other.

The sentences in (52) and (53) involve two *wh*-trace dependencies. The first one is created at s-structure, when one of the *wh*-phrases raises to Comp. The second one is created at LF when, according to Pesetsky, the other *wh*-phrase raises and adjoins to S'. In the grammatical (a) examples, the two dependency paths are nested, while in the ungrammatical (b) examples, they cross (see (55)).

(55)　a.　Mary asked [what$_j$ [who$_i$ [e$_i$ read e$_j$]]]?

　　　 b.　*Mary asked [who$_i$ [what$_j$ [e$_i$ read e$_j$]]]?

A similar constraint on movement is found with examples such as (56), which involve two instances of *wh*-movement at s-structure.[28]

(56)　a.　what subject$_i$ do you know [who$_j$ [PRO to talk to t$_j$ about t$_i$]]
　　　 b.　*who$_j$ do you know [what subject$_i$ [PRO to talk to t$_j$ about t$_i$]]

When the dependency paths cross, as in (56b), the sentence is ungrammatical. In the grammatical (56a), the paths are nested.

Pesetsky (1982: 269) observes that the same effects are found with other instances of A'-movement, such as topicalization:

(57)　a.　this problem$_i$, Mary knows [who$_i$ [PRO to consult t$_i$ [about t$_j$]]]
　　　 b.　*this specialist$_i$, Mary knows [what problems$_j$ [PRO to consult t$_i$ [about t$_j$]]]

Pesetsky's proposal of nested path dependencies receives a natural account in the economy framework presented here. Consider the examples in (55) above. Since

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(27) For other analyses of Superiority effects, see Chomsky (1973), Hendrick and Rochemont (1982), Lasnik and Saito (1992), and Cheng and Demirdache (1990).
(28) This was first observed by Kuno and Robinson (1972).

there is no Case condition relevant to A'-movement, both *who* and *what* are equally available for movement to Spec CP.[29] In (55a), the closest *wh*-phrase, *who*, raises first. The remaining *wh*-phrase, *what*, left-adjoins to the *who* in Spec CP.[30] Raising *what* first, as in (55b), violates Shortest Movement, since *what* is not the closer element to Spec CP.

7. Conclusion

This paper proposes a definition of the Shortest Movement principle based on the shortest distance between two points in a structure and the availability of elements for movement. It interprets Chomsky's (1993) shortest move principle in the purest way, without recourse to the notion of equidistance, which is a strategy used to solve apparent violations of shortest move. The system proposed here accounts for ergative languages in a straightforward manner, recognizing Nested Paths as the basic path of NP movement, in contrast to most recent theories of Case and NP movement that assume Crossing Paths to be universal.

The Crossing Paths movement found in accusative languages results from the assignment of Case to the object by the verb, and the proposed Condition on Spec-head Case assignment that restricts verbal Case assignment to NPs in Spec TrP. The object has no option but to raise to Spec TrP, leaving only the subject to raise to the other Spec position. In such cases where there is no choice of NPs available for movement, Shortest Movement does not apply. The existence of Crossing Paths demonstrates that Shortest Movement operates to select the most economical derivation only in cases where a choice of derivations is available.

Economy principles (of derivation) thus differ from conditions and constraints in that their application depends on their environment. Consider another economy principle discussed in Chomsky (1993), Procrastinate. According to this principle, operations should be performed as late as possible, preferably at LF. Chomsky claims that LF operations are a kind mechanical "wired-in" reflex, and thus are less

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(29) I follow Chomsky (1986a) in assuming that *wh*-phrases raise to Spec CP, and not to Comp.

(30) The issue of linearity, i.e., whether *what* is left- or right-adjoined to *who*, becomes irrelevant if we consider paths to be hierarchical as well as linear, as proposed by Pesetsky (1982). Pesetsky defines a path as consisting of a set of immediately dominating nodes rather than simply the two endpoints. In (i), the two paths are {IP,CP} and {TrP,IP,CP,NP$_2$}. The Nested Dependency condition is not violated, since the first path is contained within the second.

(i)
```
                    CP
                   /  \
                Spec    C'
                 |     /  \
               NP₂    C    IP
              /  \        /  \
           NP₃   NP₂    Spec   I'
            |     |      |    /  \
          what   who    e₂   I    TrP
                                 /  \
                              Spec   Tr'
                               |
                               e₃
```
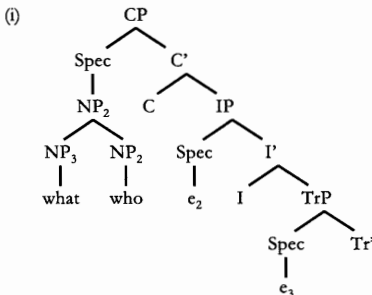
costly than overt operations. Like Shortest Movement, the application of Procrastinate varies depending on the particular derivation. In French, the properties of Agr force overt verb raising, so that there is no choice as to whether the verb raises early or late in the derivation. In English, on the other hand, where overt verb raising is not forced, Procrastinate ensures that the verb raises at LF rather than at s-structure.

Unlike conditions and constraints on derivations, the role of economy principles such as Shortest Movement is not to dictate what constitutes a legitimate derivation, but to facilitate the efficiency of the computational system in generating grammatical linguistic expressions.

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DISAGREEMENT BETWEEN ADULTS AND CHILDREN*

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1. Agreement Alternations and Learning: Two Problems

This paper is a study of the relationship between *wh*-movement and inflectional morphology in adults and children, focusing on what I will call *wh-disagreement* effects, and their relation to so-called *root infinitives* in early child language. These phenomena raise some interesting questions about language learning and language learnability which I think have been overlooked in previous literature on the topic.

What I mean by *wh*-disagreement is the kind of agreement alternation shown in (1), taken from Breton and Berber. Subject agreement is marked in declarative clauses (1a), but when the subject is extracted (1b–c), subject agreement disappears from the verb, sometimes taking other inflectional features (e.g. tense) with it (cf. 1c). In this paper I use the term 'agreement' to refer to concord of person, number, gender or any combination thereof. This alternation between extraction and non-extraction environments is also known as *anti-agreement* in the literature (cf. Ouhalla 1993), and has been reported for a sizeable number of genetically unrelated languages.[1]

> (1) a. Levrioù a lennent
>   books PCL read:3pl
>   'They read books.'

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[1] For a very useful discussion of disagreement effects in a number of languages see Ouhalla 1993. The discussion here draws on Ouhalla's insights in a number of respects, although my conclusions are somewhat different. *Wh*-disagreement effects are found in Berber (Ouhalla 1993), Breton (Stump 1984; Hendrick 1988; Borsley & Stephens 1989; Schafer 1995), Turkish (Underhill 1972; Kornfilt 1985), Fiorentino/Trentino (Brandi & Cordin 1989), Palauan (Georgopoulos 1985, 1991), Yimas (Foley 1991; Phillips 1996a), Kinande (Schneider-Zioga 1995) among others. See below for discussion of inflectional alternations in other languages which may also be considered as *wh*-disagreement.

    b. Petore paotred a   lenne (*lennent)   al levrioù
        which boys   comp read (*read:3pl) the books
        'Which boys read the books?'

                         (Breton: Borsley & Stephens 1989)

    c. man   tamghart ay   yzrin (*t-zra)   Mohand
        which woman comp see   (*3fs-saw) Mohand
        'Which woman saw Mohand?'

                           (Berber: Ouhalla 1993)

The first question involves how adult languages showing disagreement effects are learned. The problem that the learner has to solve is where *wh*-disagreement does and does not occur. This would be a very easy task for the learner if *wh*-disagreement effects always involved the loss of agreement in *all* *wh*-questions. In that case the learner would just need to decide whether she is being exposed to a +disagreement or a –disagreement language. Relevant data should be plentiful in the input. Unfortunately, though, matters are less simple. Among the range of languages which exhibit something that we might call a *wh*-disagreement effect, there is a good deal of variability regarding which kinds of questions show loss of agreement morphology when a *wh*-phrase is extracted.

For example, in some languages that show *wh*-disagreement effects in positive questions, the effect is not found in negative questions. In some languages in which *wh*-disagreement is found with local extraction it is also found with non-local extraction, but in others it is not. In some languages it occurs with object extraction, although this is generally not the case. Similar variation is found in whether *wh*-disagreement is found with all choices of mood, person or number. Furthermore, the specific morphological reflex of *wh*-disagreement also varies a good deal from language to language.

Given these many points of variation (negation, mood, locality etc.), there is a rather large number of different potential *wh*-disagreement grammars that the learner must choose among. Observation of loss of agreement in questions is obviously still informative to the learner, but in order to arrive at the correct grammar the learner must determine which of the various factors affecting the presence or absence of *wh*-disagreement effects are operative in her language. If the only way for the learner to figure this out is by direct explosure to the relevant kinds of *wh*-questions, then the prospects are not good for successful acquisition, because this will depend on the presence in the input of very obscure evidence. For example, in a language in which *wh*-disagreement effects are only observed in questions with plural subjects (e.g. Trentino/Fiorentino are examples), the learner requires exposure to *which N* subject questions in which the answer sought is a group (the only way to get a plural *wh*-subject NP), and in which the subject has been extracted out of an embedded clause and there is negation in either the matrix or the embedded clause. Although I do not have corpus evidence to back up this claim, I expect that such *wh*-questions are extremely rare in the input to children.

What we want to know, then, is whether there is a way that a learner could figure out where their target language shows *wh*-disagreement, other than by just waiting for the various kinds of obscure question types that will show this directly. I will try to

show that there are, in fact, some rather simple morphological triggers for the different kinds of variation in *wh*-disagreement effects. This issue is the focus of Section 4.

The second issue comes from actual facts about language development. Two-year old children learning certain languages which lack disagreement effects in the adult language show an alternation which is just like *wh*-disagreement, except that it is the near *mirror-image* of what we see in many other adult languages. Whereas adult *wh*-disagreement languages show loss of agreement in *wh*-extractions, the child alternation involves loss of agreement in simple declaratives, but mandatory agreement in *wh*-questions. Such effects are found in very early Dutch, German and possibly Swedish and French (Haegeman 1995; Clahsen, Kursawe & Penke 1995; Crisma 1992; Rizzi 1994; Weissenborn 1994). The question, then, is why are adults and children showing what seem to be the reverse distribution of agreement in declaratives and interrogatives? In the light of the common goal of showing that learners navigate their way through a space of *possible* grammars in search of their target grammar, this contrast is particularly troubling. I aim to show here that what the adults and children are doing is in fact the same, but that this fact is obscured by superficial details of specific constructions in the languages where we observe the agreement alternations.

There is a growing literature on both adult *wh*-disagreement effects and agreement alternations in young children, but no connection between the two phenomena has been drawn before. *Wh*-disagreement has typically been analyzed in terms of conditions on how operator-variable binding relations are satisfied (Haïk 1990; Ouhalla 1993; Schneider-Zioga 1995), whereas children's root infinitives have been attributed to the absence/deficiency of certain heads (e.g. Tense, cf. Wexler 1994) or phrases (e.g. CP, IP, cf. Guilfoyle & Noonan 1988, Radford 1990, Clahsen & Penke 1992, Rizzi 1995) in children's clause structures. It is unfortunate that these two literatures have proceeded independently, because the two phenomena show some rather striking similarities, as I hope to show below.

I begin by outlining my account of disagreement effects (Section 2), and then go on in Sections 3 and 4 to show how this accounts for the distribution of disagreement effects in child and adult languages respectively. Section 5 points to possible extensions of my account to topics including so-called 'successive cyclic *wh*-agreement' and complementizer agreement in *wh*-questions.

2. Disagreement as Failure of Verb Movement

I suggest that disagreement is a consequence of shorter-than-normal verb movement. It occurs when a verb which would otherwise raise to attach to an agreement head fails to do so. I assume that in a sentence with an agreeing verb, the verb has syntactically joined to the inflectional head that contains the relevant agreement features, and then —at the point at which lexical items are inserted to spell-out syntactic features— an agreeing form is chosen.[2] If, however, the verb is

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(2) I am assuming something like the view of the morphology-syntax connection put forward in *Distributed Morphology* (Bonet 1991; Noyer 1992; Halle & Marantz 1993, cf. also Pranka 1983), although other implementations

not syntactically attached to an agreement head, the verb is spelled out by a default form, and the agreement head is just left unrealized. So the form of disagreement effects is just due to a failure of verb movement.

Regarding *why* there is failure of verb movement, I follow Ouhalla 1993 in assuming that the restriction of *wh*-disagreement effects to null-subject languages provides an important clue to the explanation of *wh*-disagreement, and that the *wh*-disagreement effect is due to the difference between the requirements for licensing a *pro* subject and licensing a *wh*-trace subject. However, I take a different view from Ouhalla with respect to why the difference between a *pro* subject and a *wh*-trace subject affects agreement inflection.

Following a widespread view of null-subject languages (cf. Rizzi 1982), I assume the subject of a declarative clause to be *pro*, which needs to be identified by overt agreement. For agreement to be overtly spelled-out, the verb must be syntactically joined with agreement, as a result of verb-raising as in (2a). In *wh*-questions, on the other hand, the *wh*-phrase vacates subject position and what is left is a *wh*-trace rather than a *pro*, as in (2b).[3] Unlike the *pro* in (2a), the *wh*-trace in (2b) does not need to be identified by overt agreement, so there is no longer any requirement forcing the verb to raise. Assuming in addition that the verb does not raise unless forced, the presence of the *wh*-trace has the effect that the verb does not raise and hence that agreement is not realized overtly. Thus, disagreement effects are just a matter of alternations between verb raising and verb non-raising.

(2) a. Declarative / b. Wh-extraction
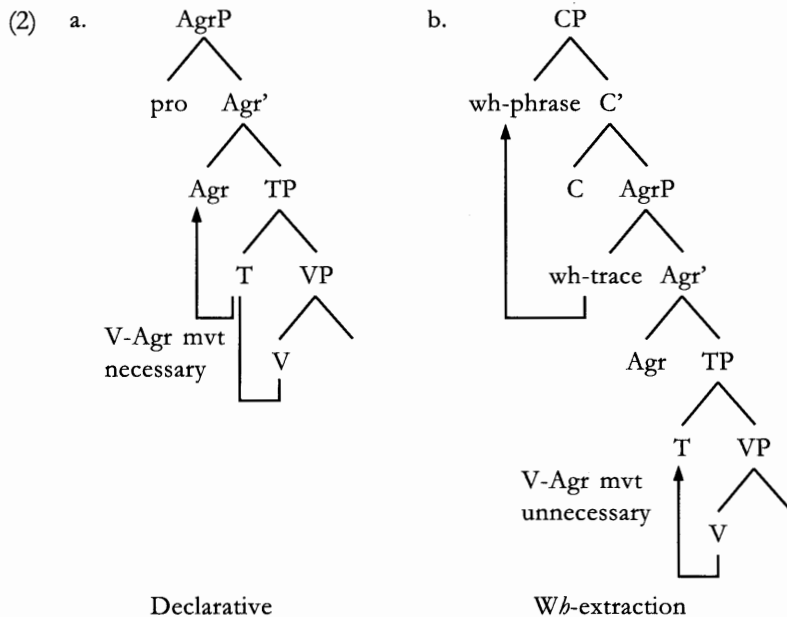
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are possible. The key assumptions for my purposes are (i) that complex morphological items are built syntactically, (ii) that there is a separation between the syntactic features of words and the forms which spell them out overtly.

(3) The analysis presented here is neutral with respect to whether subjects in null subject languages are extracted from preverbal or postverbal position.

If verb movement is required to license *pro*,[4] then we can account for why *wh*-disagreement effects are restricted to null-subject languages. The reason for this, according to my account, is the following. The verb movement requirements imposed by the overt subject of a declarative clause and the *wh*-trace subject of a question are identical. Either both overt subjects and *wh*-traces demand overt verb raising to AGR (for example, V-raising may be required for case-licensing of the subject), or neither requires verb raising. Crucially, *Wh*-disagreement only occurs when declaratives and questions make differing demands on verb movement.

Note that although the absence of a *pro* subject may remove one motivation for a verb to raise to an agreement head, other motivations for verb raising may remain, or they may be present in some constructions but not others. In other words, the requirements of specific heads may *override* the ability of the verb to fail to raise in disagreement environments. This propensity for disagreement environments to be destroyed by the presence of other heads which force verb raising I refer to as the *fragility* of disagreement contexts. This is a property which we will observe in a number of situations in adults and children in what follows.

The next thing to do is to show how this approach to disagreement makes sense of the variation in these effects in adults, and also of why children appear to be doing the opposite of adults. We begin in Section 3 with disagreement effects in child language.

3. Disagreement in Children

The agreement alternation found among two-year olds is the following. The agreement alternation involves declaratives and questions. Two-year old children learning Dutch or German typically produce many declarative clauses in which the verb is a non-agreeing infinitive rather than an agreeing finite verb.[5] These are what have become known as *root infinitives* (Weverink 1989, Wexler 1994, Rizzi 1994). Root infinitives have been observed in French (Pierce 1989, 1992), Dutch (Weverink 1989, Haegeman 1995), German (Clahsen & Penke 1992, Verrips & Weissenborn 1992, Poeppel & Wexler 1993), Swedish (Platzack 1990, Santelmann 1994), English (Wexler 1994), Faroese (Jonas 1995) and Russian (Bar-Shalom et al. 1996) among

(4) This claim is intended to apply only to null subject languages in which the null subject is licensed by agreement (e.g. Italian), and not to the variety of null argument language in which null arguments are licensed by discourse factors (e.g. Chinese, Japanese).

(5) Clearly, root infinitives are not just agreement-less forms, they are also tenseless. In fact, a good deal of work on root infinitives has assumed that they are due to a problem with the syntax of tense rather than agreement (e.g. Wexler 1994). Given the portmanteau tense-agreement morphology of all of the child languages discussed in this section, there is no reason to restrict attention to either tense or agreement. Furthermore, I am unaware of any evidence that points to either tense or agreement being mainly responsible for root infinitives.

However, this certainly does not mean that the question is unresolvable. In a study of one Hebrew speaking agrammatic aphasic, Friedmann & Grodzinsky (1994) provide a compelling argument that specifically tense and not agreement is impaired. It is possible to separate tense and agreement in Hebrew, because they are realized by independent morphological markers. Unfortunately it is not clear at this point how similar the morphological simplifications found in the speech of aphasic patients are to children's root infinitives.

others, and they make up from 10-75% of the matrix verbs in corpora of children's spontaneous speech, depending on the age of the child and the target language (cf. Phillips 1995, 1996c). Some examples of root infinitives from German are shown in (3), taken from Poeppel & Wexler 1993.[6]

(3)   a.   Thorsten Caesar haben   b.   du das haben
           T.   C.   have   you that have
                                          (Andreas 2;1: cf. Wagner 1985)

A striking fact that a number of studies have observed is that in some languages children who produce many root infinitives in subject-initial declaratives produce no root infinitives at all in their *wh*-questions and topicalizations; all of the verbs are finite and show the correct agreement. (4) shows figures demonstrating this effect in a single Dutch child (Haegeman 1995). Across the 10 month sample analyzed by Haegeman Hein used root infinitives in 16% of his utterances, but in his *wh*-questions this figure dropped to 2%.

(4)   Dutch: no root infinitives in questions (Haegeman 1995).

Hein 2;4–3;1	+*finite*	–*finite*	% –*finite*
All clauses	3768	721	16%
wh-questions	88	2	2%

Total = 4579, $\chi 2$ = 12.71, p < 0.001
(Hein corpus: Elbers & Wijnen 1992)

Similar effects have been shown for a number of children learning German, Dutch and Swedish. Kursawe 1994 shows that in a corpus of 307 *wh*-questions in early German there is only one instance of a non-finite question. Her corpus is based on children who produce significant proportions of root infinitives in their declarative utterances.[7] Santelmann 1994 reports a similar effect in early Swedish *wh*-questions. 574 of 579 *wh*-questions (99%) had the verb in second position. Given the independently established high correlation between finiteness and second position in child Swedish (Santelmann, p.c.), this shows the same disappearance of root infinitives in questions/topicalizations observed in German and Dutch.

I suggest that the mechanism for the alternation between consistently agreeing questions and regularly non-agreeing subject-initial declaratives is almost identical to the account I sketched above for adult *wh*-disagreement. Loss of agreement is due to failure of verb movement.

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(6) These examples and most of the other figures reported in this section are based on transcribed recordings of the spontaneous utterances of children that are available on the CHILDES database (MacWhinney & Snow 1985).

(7) Clahsen, Kursawe & Penke (1995) show that Kursawe's finding extends to an even larger corpus of 1200 *wh*-questions.

Suppose that in *wh*-questions, as in (5), the children know that the verb has to raise to C, and that they respect this requirement. A side effect of this is that the verb will pick up agreement features on its way to C, and therefore only finite forms will be possible (5b–c). But if we adopt an 'asymmetric' analysis of V2 (for adults as well as children) and assume that basic subject initial declaratives are IPs (cf. Travis 1984; Zwart 1993), then declaratives impose no V–I–C requirement —because there is no CP.[8] At most V–I movement is required, but these young children are able to fail to move V to I (6a). We can leave open here the question of exactly *why* the children fail to raise their verbs: this is the topic of a whole separate literature.[9] When children fail to move the verb to I, no inflectional heads are picked up, and therefore the default, infinitival verb form is spelled-out. This is why both finite (6b) and non-finite forms (6c) are found in subject-initial declaratives.

V2 LANGUAGES

(5) a. *Wh*-questions: AGR obligatory   b. Was macht Hans?

      C   I   V c. *Was Hans machen

     ↑   ↑ optional

         obligatory

(6) a. Declaratives: AGR optional   b. Hans macht etwas

      I   V   c. Hans etwas machen

     ↑

       optional

In Germanic children's root infinitives we can see directly that disagreement is a consequence of failure of verb movement, because the children almost always put finite verbs in second position and root infinitives in final position, as a number of researchers have demonstrated. (7) shows figures drawn from Poeppel & Wexler's counts of one German child aged 2;1, the same effect has been found in many other corpora of early Dutch and German (Mills 1985; de Haan 1987; Clahsen 1988/1991; Weverink 1989; Meisel 1990; Verrips & Weissenborn 1992; Boser et al. 1992; Haegeman 1995).

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(8) This is by no means an innocent assumption. For arguments against this 'asymmetric' account of V2 see Vikner & Schwartz 1990. An anonymous reviewer objects that all clauses in German and Dutch, whether declaratives, topicalizations or questions, must be CPs, given the assumption that the head of CP hosts information about the mode and illocutionary force of the sentence. However, it is entirely consistent with this view that a clause that lacks a CP projection is interpreted as being of 'default' mode, i.e. declarative.

(9) The first extensive discussion of root infinitives from a cross-linguistic perspective is due to Wexler 1994. Another influential account of a range of cross-linguistic facts involving root infinitives can be found in Rizzi 1994. See Phillips 1995 for a review of much of the literature on root infinitives up to mid-1995, and an argument that children's failure to move V to I is due to a deficit in their syntactic derivations rather than their syntactic representations.

(7)   Poeppel & Wexler (1993): ±agreement correlates with ±V2 in early German

Andreas 2;1	+finite	−finite
V2 (& not final)	197	6
V-final (& not V2)	11	37

Total = 251, χ^2 = 150.26, p < 0.0001

Similarly, Pierce (1989, 1992) shows that young French children's positioning of their verbs either to the left or to the right of negation correlates extremely well with the finiteness of the verb. Finite verbs appear to the left of negative *pas* 96% of the time, and non-finite verbs appeared to the right of negative *pas* 99% of the time.

Topicalization in the speech of children acquiring Germanic verb second languages shows the same pattern as *wh*-movement: root infinitives are also not found in children's topicalization structures in these languages. This is not surprising, given the standard assumption that topicalization also requires V–I–C movement in these languages. Haegeman 1995 shows that in the Hein corpus 101 of 1324 sentences with an overt subject in initial position (8%) are non-finite, whereas just 5 of 1351 sentences with a non-subject in initial position (0.3%) are non-finite. Similarly, Poeppel & Wexler 1993 show that whereas 24 of 154 subject initial declaratives (16%) are non-finite in the Andreas corpus, none of Andreas' 50 non-subject initial declaratives are non-finite.

The contrast between the distribution of verb forms in questions/topicalizations and declaratives is not found in all child languages in which children use root infinitives. In child English, for example, the proportion of root infinitive main verbs is identical in declaratives and subject questions, as the table in (8) shows (cf. Phillips 1995, 1996c).[10] This is expected under the account given here, because main verbs behave alike in subject questions and declaratives in English, as can be seen in (9–10), so they should not differ in agreement, given the account proposed here, in which the presence or absence of agreement is linked to the absence or presence of overt V–I movement (or I–V movement in the case of English main verbs).

(8)   English: identical rates of main verb inflection in subject questions and declaratives

Adam 2;3–3;1	inflected V	uninflected V	% inflected
Declaratives	134	203	40%
subject questions	69	92	43%

Total = 498, $\chi 2$ = 0.43, p = 0.51

(10) Figures are only given for Adam because he is the only English-speaking child in the CHILDES database who asks sufficiently many subject questions between age 2 and 3 to make a meaningful comparison of inflection rates in subject questions and declaratives.

A note is in order on how these figures were arrived at. First, only *main verbs* are considered. This is important, because (i) only main verbs show ±finite alternations in child English (children's auxiliaries are either finite or absent, but *never* non-finite, as many people have observed: cf. de Haan & Tuijnman 1988, Sano & Hyams 1994, Wexler 1994), (ii) only main verbs are positioned identically in declaratives and subject questions in adult English. In addition, utterances that could not be called 'spontaneous' were excluded from the counts (i.e. repetitions of something that the child's caretaker just said, self-repetitions, songs etc.). More precise details of the counting procedures are given in Phillips 1995.

(9) a. *Wh*-questions   b. Who likes ice-cream
          C   I   V   c. Who like ice-cream
          └─────────────────────────────↑
                         optional

(10) a. Declaratives   b. She likes ice-cream.
                               I   V   c. She like ice-cream.
          └─────────────────────────────↑
                         optional

Additionally, the lack of contrast between declaratives and subject questions in English lends support to my account of the German/Dutch/Swedish alternation over the account proposed by Rizzi (1994). Rizzi attributes the alternation to the suggestion that children's declarative clauses may be 'truncated', so that they are missing CP/AgrsP/TP, but *wh*-questions may not be truncated, assuming that CP is required in a well-formed *wh*-question. If projection of CP entails the overt presence of finite inflection, then Rizzi's theory incorrectly predicts the absence of uninflected forms in English subject questions.[11]

Therefore, the children's disagreement effects are due to failure of verb movement, just as I have suggested for *wh*-disagreement in adults. The only difference is that the chilren's alternation is found in languages which show different verb movement requirements across construction types. In the null-subject languages in which adult *wh*-disagreement effects are found (Berber, Breton, Turkish etc.), *wh*-extraction entails *shorter* verb movement than declaratives, because *pro* does not need to be identified in *wh*-questions. In the child languages in which disagreement is found in declaratives (German, Dutch, Swedish), *wh*-extraction requires *longer* verb movement, because of the requirement that V move to C in questions and topicalizations in these languages.

What we have observed in children in this section is that they fail to raise verbs to Infl/Agr, unless some other requirement overrides this. This is one example of the fragility of disagreement effects, and it is not the only such effect found in children. The need for verb raising in order to license nominative case on overt subjects (in languages with verb raising) similarly overrides the possibility of failing to raise the verb. This is shown by the fact that in verb raising languages (but not in English) overt subjects almost never cooccur with root infinitives (cf. Phillips 1995, 1996c for further details).

In Section 4 we will observe further cases of fragility in the distribution of *wh*-disagreement effects in adult languages.

(11) In fact, Rizzi's theory predicts that any clause in English that projects higher than AgrO should show perfect agreement marking. Therefore, the only way to accommodate the facts about English subject questions into Rizzi's approach would be to assume that English children's subject questions may contain *wh*-phrases in Spec,VP or Spec,AgrO. Moreover, in order to account for the cross-linguistic facts, it would be necessary to assume that this truncation option for English subject questions is not available in Dutch and German children's subject questions.

4. Disagreement in Adults

Recall from Section 1 the learnability problem involving *wh*-disagreement effects. Languages that show *wh*-disagreement effects typically do not show disagreement effects in all *wh*-questions. There are a number of parameters of variation in which kinds of questions show loss of agreement: the factors include negation, length of extraction, subject vs. object extraction, mood and number. Given these variations, the problem for the learner is that in order to stand a fair chance of acquiring the details of where *wh*-disagreement does and does not occur in her target language, she needs to be able to learn the distribution of disagreement effects from something other than exposure to the various obscure question types which would be needed for direct learning.

This section shows how the verb movement approach to disagreement effects may provide an account of the variation in where *wh*-disagreement does and does not occur in different languages, and also points to the 'triggers' that learners might use to acquire the properties of *wh*-disagreement in their target language.

The verb movement account of disagreement effects makes a very simple prediction about cross-linguistic variation. *Wh*-disagreement should occur where the verb does not need to raise to license a *pro*, and therefore does not need to raise to AGR. But this effect is predicted to be quite *fragile*, by which I mean that if there happens to be some other independent property of the clause that requires verb raising to AGR or beyond, then the verb will raise as far as or beyond AGR, even in *wh*-questions. For example, if there is some head F^0 above AGR which the verb must attach to overtly, then *wh*-questions will not show disagreement effects, because the verb is forced to pick up the agreement head on its way to F^0, assuming that strictly local head movement is forced. This scenario is shown schematically in (11) as the *Highest Head Generalization*.

(11)   HIGHEST HEAD GENERALIZATION
        If AGR is the highest head to which the verb potentially moves, then *wh*-disagreement is possible. If the verb is independently required to raise to a functional head *above* AGR, then agreement is realized (i.e. disagreement is impossible).
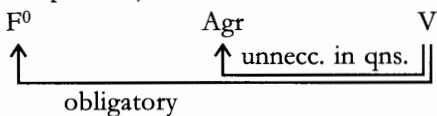
The Highest Head Generalization (HHG) has immediately testable consequences for the distribution of variation in *wh*-disagreement effects.

4.1. Varying Consequences of Negation and Long Extraction

The HHG straightforwardly captures an observation due to Ouhalla (1993), that *wh*-disagreement effects are found in negative questions in those languages where

the negative morpheme is morphologically closer to the verb (and presumably syntactically lower) than subject agreement, but not in those languages where negation occurs outside, or higher than, subject agreement.[12] In a language like Turkish (12a), in which negation appears inside subject agreement, it should be possible in a negative subject question for the verb to raise as far as negation without moving as far as AGR and picking up agreement on the way. Therefore negation has no effect on *wh*-disagreement. In languages like Berber or Breton in (12b–c), though, in which I assume that negation is structurally higher than subject agreement and must be joined with the verb by the point of 'spell-out', negative questions require that the verb raise to NEG via AGR, picking up lower inflectional heads on the way, with the consequence that the *wh*-disagreement effect is not found in negative questions in these languages.[13]

(12) a. TURKISH: [V-NEG]-AGR   disagreement
              Hoca-yi   gör-me- yen(*-ler)   ögrenciler
              lecturer-acc   see-NEG-PART(*-3pl)   students
              'The students who did not see the lecturer.'

      b. BERBER: NEG [AGR-V]   agreement
              man   tamghart ay   ur   t-   ssn   Mohand?
              which woman COMP   NEG 3fs- know Mohand
              'Which woman doesn't know Mohand?'   (Ouhalla 1993)

      c. BRETON: NEG [V-AGR]   agreement
              Petore paotred ne   lennent (*lenne) ket   al levriou
              which boys   NEG read:3pl (*read) not the books
              'Which boys did not read the books?'   (Borsley & Stephens 1989)

Therefore, the learner should need to only pay attention to the relative morphological embedding of subject agreement and negation in declarative utterances in order to figure out whether negative questions show disagreement effects in his target language.

A similar account may be possible for the variation across languages in whether long-distance extraction leads to *wh*-disagreement effects, or whether only short distance extraction gives rise to *wh*-disagreement. I suggest that properties of the complementizer position just above the extraction site determine whether disagreement occurs in long-distance extractions. If the embedded verb has to raise to C, either because the C position must be filled, or because the complementizer is affixal, then the verb will have to move to C via AGR, and no *wh*-disagreement effects are predicted to be found in long-distance extraction. This, is what I assume is the case in Berber (13a) and Cornouaille Breton (13b). Berber shows *wh*-dis-

(12) For the purposes of this discussion I am assuming that the *Mirror Principle* (Baker 1985) is a roughly accurate generalization, so that the morphological structure of a word reflects the hierarchical structure of the syntactic heads that the word is built from. There are counterexamples to Baker's generalization, but I have nothing to say about them here.

(13) Turkish differs from Berber and Breton in that disagreement effects are confined to relative clauses in Turkish, whereas they are found in both relative clauses and overt *wh*-extraction contexts in Berber and Breton. I will have nothing further to say here about this particular kind of variation.

agreement effects in local subject extractions but not in long-distance subject extractions. I suggest that this is because the complementizer *qa* shown in (13a) is affixal, and requires the verb to raise to attach to it, which entails picking up agreement on the way. The Cornouaille dialect of Breton shows a similar contrast between local and non-local extraction. In this case I assume that this is because the verb (an auxiliary in (13b)) is required to raise to fill the embedded C^0 position.

(13)   a.   BERBER: agreement
            man   tamghart ay   nna-n   qa   t-zra   Mohand
            which woman   COMP   said-3pl   that 3fs-saw M.
            'Which woman did they say saw Mohand.'   (Ouhalla 1993)

       b.   BRETON (Cornouaille dialect): agreement
            Setu ar mere'hed hoc'heus lavaret emaint o   labourat e Kemper
            here the women   have:2pl said be:3pl PART work in Kemper
            'Here are the women who you said are working in Kemper.'
                                                             (Hendrick 1988)

If, on the other hand, the embedded complementizer position in a *wh*-disagreement language does not need to be overtly filled or contains a free-standing complementizer, then we predict no contrast between disagreement effects in local and long-distance extractions, because the verb is not forced to raise to C. This is the analysis I suggest for *wh*-disagreement effects in long-distance questions in the Tregor dialect of Breton (14a) and in Fiorentino (14b). The Tregor Breton example in (14a) and the Cornouaille Breton example in (13b) contrast in that there is an overt complementizer *a* in the Tregor example. If we assume that both Tregor and Cornouaille Breton observe a requirement that the embedded C position be overtly filled, then the presence of the overt complementizer in Tregor obviates the need for verb movement and therefore makes *wh*-disagreement possible. I assume that in the Fiorentino example (14b) the embedded verb does not need to raise to C because the complementizer *che* is free-standing.

(14)   a.   BRETON (Tregor dialect): disagreement
            Petore paotred a   sonj deoc'h   a   lenne (*lennent) al levriou?
            which boys COMP think to-1sg comp read (*read-3pl) the books
            'Which boys do you think read the books?'
                                                         (Borsley & Stephens 1989)

       b.   FIORENTINO: disagreement
            Quante ragazze   tu   credi che' e'   sia venuto?
            'How many girls do you think that (it) has come?'
                                                         (Brandi & Cordin 1989)

What this account currently lacks is the specification of a procedure that the learner can use to determine whether an overt complementizer is affixal or not. However, assuming that such a procedure can be supplied, this account makes it much easier for the learner to determine whether his target language shows long-

distance *wh*-disagreement. If embedded V–C movement is the factor that determines whether a language shows *wh*-disagreement in long-distance questions, then this property should be learnable without direct exposure to long-distance *wh*-questions, and can be determined based on declarative utterances alone.

I do not mean to suggest that the learner needs no exposure to *wh*-questions at all in order to learn that his target language shows *wh*-disagreement. I assume that at least *some* form of agreement alternation between extraction and non-extraction contexts must be observed in the input. What I have attempted to show in this section is that once the learner has observed this basic fact, he can figure out the finer details of where *wh*-disagreement does and does not occur using evidence that is available from declarative utterances.

4.2. The Status of Operators

In §4.1 I focused on a reanalysis of facts about variation in *wh*-disagreement effects that have been discussed in previous literature, notably Ouhalla 1993. Ouhalla's account is one of a series of analyses of *wh*-disagreement which attribute the effect to properties of A-bar binding relations involving operators. This is rather different from the perspective on *wh*-disagreement offered here, which attributes the effect to properties of verb movement. In this section I examine the importance of syntactic relations involving operators for *wh*-disagreement, and suggest that operator status is irrelevant to *wh*-disagreement.

I begin by giving a sketch of why A-bar binding relations yield disagreement effects in a couple of existing accounts.

The most comprehensive account of *wh*-disagreement in the literature is due to Ouhalla (1993), who assumes that the loss of agreement in *wh*-questions is a consequence of how binding conditions on variables are satisfied. Ouhalla assumes that *wh*-disagreement occurs when the extraction site is locally A-bar bound by a coindexed operator. A coindexed operator locally A-bar binds an extraction site if it is (i) in the same binding domain (Complete Functional Complex in the sense of Chomsky 1986) as the extraction site, and (ii) the closest A-bar operator to the extraction site. For example, in *Everybody doesn't know who$_i$ t$_i$ John saw* there are three A-bar operators (*everybody, not, who*), but *who* is the closest A-bar operator to the position containing the *wh*-trace. Since it is also in the same clause as the *wh*-trace and coindexed with the trace, the extraction site is locally A-bar bound in this case. On the other hand, in *Everybody knows who$_i$ John didn't see t$_i$* the trace is not locally A-bar bound by a coindexed operator, because the negative operator occurs between *who* and the trace.

For Ouhalla the relevance of such configurations for disagreement phenomena is that he assumes that the null argument *pro* must be prevented from appearing in the extraction site when the *wh*-phrase is the closest A-bar binder. This is because *pro* must not be locally A-bar bound, as required by the *A-bar Disjointness Requirement* (ABDR: Aoun & Li 1990, 1993). The ABDR requires that a pronominal be locally A-bar free. If *pro* occupies the extraction site and the *wh*-phrase is the closest A-bar binder, then the ABDR is violated (15a). If, on the other hand, subject agreement is neutralized (15b), *pro* is no longer licensed, and therefore a *wh*-trace must occupy the

extraction site, thereby avoiding a violation of the ABDR, since a *wh*-trace is assumed not to be a pronominal, and therefore is not subject to the ABDR.

Schafer (1995) proposes a different but related account of disagreement effects in Breton. She assumes that disagreement occurs when the position that the subject was extracted from satisfies the antecedent government requirement of the Empty Category Principle (ECP). Antecedent government is satisfied when the extracted *wh*-phrase is the closest A-bar binder to the extraction site. When antecedent government fails, a null resumptive *pro* must fill the subject position, which in turn triggers the presence of subject agreement.

The most interesting prediction of the approach that Ouhalla and Schafer adopt is that when another A-bar binder intervenes between the moved *wh*-phrase and the extraction site, *wh*-disagreement should no longer occur, because the *wh*-phrase is no longer the closest A-bar binder (15c). As (15d) shows, the presence of an additional operator is only relevant if it intervenes between the *wh*-phrase and the extraction site. If the operator is not the most local A-bar binder of the extraction site, it is not expected to affect whether or not disagreement occurs.

(15)   Predictions of A-bar binding accounts of *wh*-disagreement

a.	*		wh_i		pro_i	AGR
b.			wh_i		wh-trace$_i$	AGR$_{neutralized}$
c.			wh_i	operator	pro_i	AGR
d.	*	operator	wh_i		pro_i	AGR

Given the standard assumption that negation is an operator, Ouhalla's and Schafer's proposals provide an account for why *wh*-disagreement effects are not found in negative questions in languages in which negation intervenes between the subject position and the *wh*-phrase in Spec,CP. The effect of this is that the *wh*-phrase is no longer the closest A-bar binder of the subject position, and hence rich agreement may be present to license *pro* in the extraction site. Negative questions in Breton and Berber, then, involve configurations like (15c).

Ouhalla also provides an analysis in these terms of why there is cross-linguistic variation in whether or not long extraction leads to *wh*-disagreement or not. He assumes that intermediate CP-specifiers are operators in some languages but not others. If the intermediate CP-specifier is an operator, then it is able to locally A-bar bind the extraction site, potentially leading to disagreement effects. If, on the other hand the intermediate CP-specifier is not an operator, then there is no possibility for the extraction site to be locally A-bar bound by a coindexed operator, and therefore *pro* may be freely licensed in the extraction site.[14] Although Schafer does not provide an explicit account of how such variation may be handled in her approach, it is likely that it could easily be adapted to account for such facts.[15]

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(14) One thing that is not clear under this account is how the learner is supposed to determine whether the intermediate CP-specifier is an operator or not. The only possible method would seem to be by reasoning backwards from the presence or absence of *wh*-disagreement effects in long-distance questions. This means that the learner can only learn the properties of long-distance questions from exposure to long-distance questions.

(15) See Haïk 1990, Georgopoulos 1991 and Schneider-Zioga 1995 for further accounts of *wh*-disagreement phenomena which attribute the effect to an interaction of the inflectional system with conditions on how operator-variable chains are licensed.

For A-bar binding accounts of *wh*-disagreement, the reason for variation in negative and long-distance questions involves the presence or absence of an *operator* between the *wh*-phrase and the position from which it was extracted. In the verb-movement account of disagreement effects, on the other hand, the fact that negation and CP-specifiers are operators is irrelevant to *wh*-disagreement. All that matters is whether or not a morphological requirement forces the verb to raise as far as (or beyond) AGR. In the remainder of this section I document a couple of cases of non-operators which block *wh*-disagreement, and I describe a test case involving an intervening operator which might not block *wh*-disagreement. These situations suggest that intervening operators may be neither a necessary nor a sufficient condition for the blocking of disagreement effects, and they receive an account under the verb-movement approach.

4.2.1. *Non-operators*

The first divergent prediction that the verb movement account makes is that any head that can force verb movement could potentially block *wh*-disagreement, regardless of whether or not it is an operator. I am aware of at least two cases of languages where *wh*-disagreement effects are blocked by non-operators: one case involves agreement, the other involves mood.

The Papuan language Yimas (Foley 1991, Phillips 1996a-b) shows *wh*-disagreement in subject questions, except in situations where the object agreement marker is structurally higher than the subject agreement marker.

Yimas is a language with a very rich system of verbal inflection. In declarative sentences, both subject and object agreement appear as prefixes on the verb, and agreement marking follows a person-based split-ergative case/agreement system.[16] What is particularly interesting about Yimas for our purposes here is the fact that because of its split ergative agreement system, subject agreement sometimes appears closer to the verb than object agreement (i.e. following object agreement, cf. 16b) and sometimes appears further from the verb than object agreement (cf. 16a). I will assume here without discussion that the left-right ordering of prefixes in Yimas maps transparently onto their hierarchical syntactic structure: morphemes on the left spell-out structurally higher heads. See Phillips 1993, 1996a-b for justification of this assumption, in particular the assumption that 3rd person object agreement (absolutive) is the spell-out of a syntactically higher head than 3rd person subject (ergative) agreement (16b).

(16)   a.   pu-   nan-   tay   b.   pu-   n-   tay
            3pl.abs 2sg.acc see   3pl.abs 3sg.erg see
            'They saw you.'   'He saw them.'

(Foley 1991)

(16) In Yimas first and second person agreement markers follow a nominative-accusative system, whereas third person agreement markers follow an ergative-absolutive system. This is, in fact, a simplified characterization of what is actually found in Yimas. See Phillips 1996a for an account of the person-based ergative split in this language.

Yimas shows a *wh*-disagreement effect when subjects are extracted, but only when the subject agreement is the leftmost (i.e. outermost) agreement marker (Phillips 1996b). (17a) shows an example of loss of subject agreement in subject extraction; (17b) shows that when the object is marked by a 3rd person absolutive agreement marker, subject extraction does not lead to the loss of the 3rd person ergative agreement marker.

(17)   Yimas subject extraction
   a. 1st/2nd person object: subject agreement absent
       nawm   m-   kul-   cpul   -um?
       who-pl   Comp   2pl-Acc hit   PLUR
       'Who hit you all?'
   b. 3rd person object: subject agreement present
       nawrm   na-   mpi   -tpul?
       who-dual   3sg-Abs   3dual-Erg hit
       'Which two people hit him?'   (Foley 1991)

This contrast in whether subject extraction leads to *wh*-disagreement, depending on whether subject agreement is the most peripheral agreement marker, is reminiscent of the cross-linguistic contrast in the effect of negation on disagreement effects. When object agreement is a lower head than subject agreement (17a) this is like negation in Turkish, which has no effect on *wh*-disagreement. When object agreement is a higher head than subject agreement (17b) this is like negation in Breton, which blocks *wh*-disagreement.

I assume a similar analysis for the distribution of agreement in Yimas questions as for the distribution of agreement in negative questions in Breton, Turkish etc. When a subject is extracted the subject position is occupied by a *wh*-trace rather than by *pro*. Since the *wh*-trace does not need to be identified by means of overt agreement, this factor no longer drives verb movement to adjoin to AGR(subject), and therefore subject agreement may not be overtly realized. This is the situation when subject agreement is the highest/most peripheral agreement head in a clause. If, on the other hand, the verb is independently forced to raise to a *higher* agreement head, then subject agreement is picked up by the verb along the way and hence it is overtly realized. This is the situation when subject agreement is lower than object agreement in Yimas.

These facts show us that more than just operators can destroy the environment for *wh*-disagreement. They also support the claim that variation in *wh*-disagreement effects is due to whether the heads that potentially block *wh*-disagreement are syntactically higher than or lower than the head that agrees with the extracted argument.

Further evidence that non-operator elements may block *wh*-disagreement effects can be found in the Austronesian language Palauan (Georgopoulos 1985, 1991). Palauan is best known in the syntactic literature for what has been called *wh-agreement*, a morphological change in the form of verbs in clauses that have been extracted from (Chung 1982). However, the term '*wh*-agreement' should not be understood to mean that an extra morpheme appears in *wh*-extraction contexts

which agrees with the extracted argument. What has been called *wh*-agreement in fact generally involves a morphological alternation which leads to the *loss* of agreement with the extracted argument (Dukes 1992, Nakamura 1995; cf. Chung 1994). In Palauan, for example, extraction leads to alternations in the *mood* morphology on the verb between realis (R) and irrealis (IR). Note that the cases of extraction that we will be looking at in Palauan are topicalizations rather than *wh*-extractions. In the case of subject extraction, it is perhaps no coincidence that the mood alternation involves a shift from the irrealis mood, a mood in which subject agreement is mandatory, to realis mood, a mood in which subject agreement is normally marked only optionally (cf. Georgopoulos 1991: 28). Moreover, when the subject is extracted, subject agreement is not even optional, it is impossible, contrasting with the optionality of subject agreement in declarative clauses with the same realis mood marking, in which subject agreement is optionally marked. This distribution of agreement is strongly reminiscent of *wh*-disagreement effects. (18a) shows an instance of long-distance topicalization of a subject, with the requisite realis mood marking on the embedded verb.[17] (18b) is identical to (18a), except that it is the object that has undergone topicalization in this case, and the verb is accordingly marked with irrealis mood.

(18)   a. Mary$_i$ [a   kltukl   [el kmo   ng-oltoir   er a John ___$_i$]]
                      R-clear   *Comp*   *R-3s-Im-love*   *P*
             'Mary, (it's) clear that ___ loves John.'
        b. a John$_i$ [a kltukl   [el   l-oltoir   er ngii$_i$ a Mary]]
                            R-clear   *Comp IR-3-Im-love*   *P   him*
             'John, (it's) clear that Mary loves (him).'

                                                                    (Georgopoulos 1991)

The mood alternation triggered by subject extraction may therefore be nothing more than the spell-out of a verbal complex which lacks subject agreement features, in parallel to the use of participles or neutralized agreeing forms in the other languages we have seen.

What is particularly interesting about *wh*-disagreement in Palauan is that it shows another instance of the fragility of disagreement effects, such as we have seen a number of times already in children and adults. This fragility is reflected in an interaction between the *morphological* mood alternations resulting from extraction and *semantic* mood. When the choice of semantic mood and morphological mood are in conflict, semantic mood always wins. For example, 'if' clauses in Palauan can be expressed by a (nominalized) irrealis clause. This 'if' clause may have either a subject topic or an object topic. Based on the alternation shown in (18) we would expect the choice between subject and object topic to entail an alternation between realis (subject topic) and irrealis mood (object topic). However, as (19) shows, in the 'if' clause irrealis mood is used regardless of whether the topic is a subject (19a) or an object (19b). The effect of this is that the disagreement effect normally associated with subject topics is not found in conditionals, and therefore subject agreement is marked.

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(17) Realis mood is also triggered on the matrix predicate *kltukl* here —this is the famous successive cyclic *wh*-agreement effect. See below §5.2 for more on successive cyclic effects.

(19) a. David a ldese'ii   a bilas,   e   ngmou'ais   er kid
              IR-3-build   boat   Ptc R-3s-tell   P   us
          'If David builds a boat, he will tell us.'
      b. a bilas a ldese'ii   a David,   e   ngmou'ais   er kid
          boat   IR-3-build   Ptc R-3s-tell   P   us

                                                            (Georgopoulos 1991)

Assuming that the difference between realis and irrealis mood does not involve a difference between the presence or absence of an operator, the blocking effect of mood on disagreement effects in Palauan seems to again reflect the fact that *any* head, and not just an operator, can force verb movement and hence force agreement in subject extractions, contrary to the predictions of binding-theoretic analyses of *wh*-disagreement.

Note that in order for the verb movement account of *wh*-disagreement to work for Palauan it must be the case that irrealis forms of the verb (which are obligatorily marked with subject agreement) reflect longer verb movement than realis forms (which do not require obligatory subject agreement). The hierarchy of functional heads in Palauan would have to be as in (20).

(20)   [IRREALIS [AGRS [REALIS ... V

The only morphological difference between realis and irrealis verb forms, however, is the *verb marker* which is prefixed to realis forms but absent from irrealis forms (cf. Georgopoulos 1991: 25). Since I am currently unaware of any independent evidence that realis and irrealis forms differ in the verb movements that they trigger, I must leave this as an unconfirmed prediction.

4.2.2. Non-clausemate Operators

The preceding section presented arguments that intervening operators are not necessary conditions for the blocking of *wh*-disagreement effects. In this section I show the kind of evidence which could show that operators intervening between the *wh*-phrase and the extraction site are also not sufficient conditions for the blocking of *wh*-disagreement effects.

The verb movement approach to disagreement predicts that the conditions that determine whether *wh*-disagreement occurs or not should be as local to the verb as factors that can cause the verb to move. For example, if verb-movement is clause-bound, then the factors affecting the presence or absence of *wh*-disagreement should likewise be clause-bound. Potential environments for *wh*-disagreement should only be destroyed by heads which are higher than agreement but nevertheless in the same clause as the agreement head (assuming that only clausemate heads can drive verb movement).

Therefore, elements like negation should only be able to block *wh*-disagreement if they are in the same clause that has been extracted from, and not if they are in a higher clause. In practice, this prediction is not as easy to test as we might expect, because there are a number of factors which obscure the question of whether clausemate and non-clausemate negation have identical consequences for dis-

agreement effects. First, and obviously, we need to look at a language in which *clausemate* negation blocks *wh*-disagreement. This already excludes Turkish, for example. More critically, we also need to restrict our attention to languages in which *wh*-disagreement is found in affirmative long-distance extractions. Without this control it is impossible to probe for the specific effect of non-clausemate negation on *wh*-disagreement. This excludes most of the languages that we have considered here, leaving only one clear candidate for the test.

The language where we can test whether non-clausemate negation can interfere with disagreement is the dialect of Breton spoken in Tregor (Borsley & Stephens 1989). In this language *wh*-disagreement is found in both short and long extractions, as (21a–b) show. We also know that when the clause that is extracted from is negated, *wh*-disagreement does not occur, and normal agreement marking appears (21c).

> (21) Test case: Tregor Breton
> a. Ar vugale   a   lenne (*lennent) al levrioù a   zo amañ
>   the children PCL read   (*read-3pl) the books PCL is here
>   'The children who read the books are here.'
> b. Ar baotred a   soñj din   a   lenne (*lennent)   al levrioù
>   a   zo amañ
>   the boys   PCL think to:1SG PCL read   (*read-3pl)   the books
>   PCL is here
>   'The boys that I think read the books are here.'
> c. long-extraction, embedded negation: no disagreement, i.e. verb agrees
>   Ar baotred a   soñj din   ne   lennent   (*lenne) ket
>   al levrioù a   zo amañ
>   *the boys   PCL think to:1SG PCL read:3PL (*read)   not*
>   *the books PCL is here.*
>   'The boys that I think did not read the books are here.'
>   (Borsley & Stephens 1989)

The critical prediction, then, involves configurations like (22), in which a subject is extracted from an *embedded* clause, but negation is in the matrix clause. According to the head movement account of disagreement, since the negation is not in the same clause as the agreement head, it should have no effect on the *wh*-disagreement configuration, and the embedded verb should fail to agree. Under the binding theoretic approach, on the other hand, negation should block *wh*-disagreement, and the embedded verb should agree.

> (22) long-extraction, matrix clause negation: ???
>   wh$_i$ **NEG**   V   [CP   t$_i$ AGR-V

At present this stands as an unverified prediction of the theory, as I am unaware of the status of configurations like (22) in Tregor Breton. However, I mention this case because it provides a relatively simple instance of data that could support, or present a serious problem for, the head movement analysis of *wh*-disagreement that

I have proposed here. Note that if it turns out that only clausemate negation interferes with *wh*-disagreement effects, then this does not argue against accounts of *wh*-disagreement stated in terms of A-bar binding, because most of these accounts either already incorporate or could easily be modified to incorporate, a restriction of the relevant binding domain to the local clause. However, if non clausemate negation *does* interfere with disagreement effects in Tregor Breton, this is more of a problem for my approach than the binding-theoretic approaches, which could be accommodated in order to account for such data.

4.3. The Forms of Disagreement

Another point of cross-linguistic variation in *wh*-disagreement involves the precise morphological form of the verbs affected by disagreement. In the Northern Italian dialects Fiorentino and Trentino 'neutral' 3rd person singular forms of the verb are used; in Yimas agreement morphemes are dropped from otherwise unaltered verb forms; in Palauan the verb takes on a morphological mood in which subject agreement is not necessary; in Berber and Turkish a participial form of the verb is used; in Kinande the normal subject agreement marker is replaced by a special prefix on the verb.

(23) a. Fiorentino: *hanno*, have.3pl   →   *has*, have.3sg
      b. Yimas   *mpu*, 3.PL.ERG   →   –
      c. Palauan   *l-lirell-ii*, IR.3-PF.made-3s   →   *rirelll-ii*, R.PF.made-3s
      d. Berber   *t-ɣra*, 3fs-see   →   *yzrin*, see.part
      e. Kinande   *a-ka-langIra*, AGR-PRES-see →   *U-ka-langIra*,
                                                              QAGR-PRES-see

This variation in the morphological form of *wh*-disagreement across languages presents no particular difficulty for the learner, since any instance of *wh*-disagreement provides direct evidence for the verbal form used in disagreement contexts in the target language. Nevertheless, an understanding of this variability could provide an informative clue to the nature of *wh*-disagreement effects.

As already mentioned in a couple of places above, the account of *wh*-disagreement proposed here predicts that the form of the verb used in *wh*-disagreement contexts should be the spell-out of all features normally marked by an inflected verb *except* subject agreement. What this spell-out looks like will depend on factors such as (i) whether agreement is normally realized by an independent morpheme, or whether it shares a morpheme with other inflectional features (e.g. tense), (ii) what conditions apply in the language to determine what constitutes a morphologically well-formed word.

Therefore, the simplest spell-out of disagreement will be found in a language in which agreement is an independent morpheme, and in which there are few or no morphological well-formedness conditions on words. Yimas is an example of such a language: it just drops the morpheme that agrees with the extracted argument. Palauan represents a slight variant on the Yimas situation: it allows dropping of subject agreement, but only in the realis mood. Therefore, the most striking feature

of *wh*-disagreement in Palauan is the alternation in morphological mood, although the mood alternation may just be a reflection of the omission of subject agreement.

In Fiorentino and Trentino agreement is not dropped from the verb in disagreement contexts, rather plural agreement is 'neutralized' to singular agreement forms. The choice of neutralizing rather than omitting agreement in these languages may be a response to the fact that tense and agreement share a morphological marker. If the verb still needs to spell-out tense, then some agreeing form must be used. Third person singular is just the default agreeing form.

The situation in Berber and Kinande is slightly more complex. In Berber a participial verb form replaces agreeing verbs in disagreement contexts, and in Kinande the normal subject agreement marker is replaced by another morpheme. These situations may reflect a response to morphological well-formedness conditions that are operative in the respective languages. If it were not for the discontinuous morpheme *y...n* in Berber participles or the additional prefix in Kinande, the agreement-less verbs would not qualify as possible words in the language.

Therefore, I am suggesting that the forms of the verb used in *wh*-disagreement alternations represent the minimal change required in a given language to spell-out a verbal complex which lacks subject agreement features.[18] This account of the variability in the morphological realization of *wh*-disagreement is a natural consequence of the verb movement approach to disagreement.

In sum, this section has surveyed some of the considerable variability that is found across languages in the kinds of questions that are affected by *wh*-disagreement effects, and suggested the morphological factors that may be responsible for this variability. The generalization proposed is that when the position and morphological requirements of a given head force a verb to move to it, picking up subject agreement along the way, *wh*-disagreement effects are not found in subject extractions. This account parallels the account given for disagreement effects in early child language (i.e. so-called 'root infinitives') in § 3 above, and thereby explains why adult *wh*-disagreement effects are similarly *fragile* to child disagreement effects. In addition to explaining the parallels between adult and child disagreement effects, this account also has potential advantages for the learnability of variability in adult *wh*- disagreement effects, because some of the parameters of variation in *wh*-disagreement may be learned based on evidence available in declarative utterances that are likely to be frequent in the input to the learner, and the learner is no longer dependent on relatively obscure types of *wh*-questions in order to determine the values of these parameters.

5. Extensions

Sections 2–4 have proposed answers to the questions raised in Section 1 concerning the nature of variability in disagreement effects, both among adult languages

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(18) In fact, a similar account may be given for the form of children's root infinitives. See Varlokosta, Vainikka & Rohrbacher 1996 for evidence for this, based on the use of a non-infinitival default verbal form by children learning Modern Greek.

and between adult and child languages. In this section I discuss some possible extensions of the analysis of *wh*-disagreement to related phenomena. The issues discussed in this section are given in (24):

(24) a. What happens to the 'stray' subject agreement heads?
      b. Why does long extraction sometimes cause 'successive cyclic' *wh*-disagreement effects?
      c. When should we expect to see disagreement processes involving *object* agreement?
      d. Do we find adult languages with exactly the same kind of agreement alternation that we have seen in two year old children?

I should note at the outset that the discussion in this section is at a more speculative level than the discussion in the previous sections.

5.1. Complementizer Agreement

The first question is one that arises immediately from the claim that disagreement is due to failure of verb movement, as a result of which the verbal complex lacks subject agreement features. I am effectively claiming that although the subject agreement features are not realized on the verb, they are nevertheless syntactically present, and would in fact be overtly visible, were it not for the accidental morphological fact that there is no spell-out for them as a free-standing word. What this should lead us to expect is that this 'accidental morphological fact' does not hold in all languages, and that sometimes we *do* see an overt spell-out of the agreement features that the verb has failed to pick up.

The best candidate that I am aware of for such a state of affairs is found in the Bantu language Kinande (Schneider-Zioga 1986, 1995). In Kinande the subject agreement markers that are prefixed to the verb in declaratives are generally impossible when the subject has been extracted. The boldface agreement prefix on the verb in the declarative in (25a) is impossible in (25b).

(25) a. Yosefu   a-   ka- yenda
         J.   AGR-   PRES-leave
         'Joseph is leaving.'
      b. yOndI   y'   (*a)-   U-   ka- langIra Marya
         who   CAGR   (*AGR)- QAGR-   PRES-see   Mary
         'Who sees Mary?'   (Schneider-Zioga 1995)

However, subject agreement does not fail to be marked when the subject is extracted. In subject extractions the complementizer agrees with the extracted subject —the morpheme glossed as *CAGR* in (25b) is a marker on the complementizer which varies with the class of the extracted noun, just like normal subject agreement in Kinande.[19]

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(19) In the Kinande examples the glosses CAGR and QAGR refer to the agreement morphemes realized on the complementizer and the verb respectively in questions and other extraction contexts.

This alternation between agreeing verbs in declaratives and agreeing complementizers when the subject is extracted may be a consequence of the same verb movement alternations which I have claimed to underlie *wh*-disagreement effects in other languages. I suggest that in Kinande the verb fails to move as far as usual when the subject is extracted: this is because there is no need to license *pro*, and it leads to the different spell-out of the verb. However, I suggest that Kinande differs from the languages discussed in §4 in the respect that subject agreement is still overtly realized in subject questions. I suggest that in Kinande the subject agreement head raises to adjoin to the complementizer position, and is then spelled-out as part of an agreeing complementizer (26b). This movement of the inflectional head to C in questions parallels the I–C movement that is familiar from non-subject questions in English such as *Who did John see?*

(26)   a. Declarative

            pro   Agr   T   V

     b. *Wh*-question

            wh   C   *t* Agr   T   V
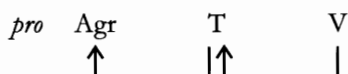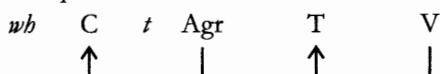
If complementizer agreement and regular agreement on the verb are the spell-out of the *same* syntactic features, then their complementarity (23b) is straightforwardly explained.

A property of Kinande subject extractions that does not follow from this account is the fact that when the subject is extracted and complementizer agreement appears, the verb still bears a prefix which marks agreement with the subject, only it is drawn from a quite different series of agreement markers from the ones used in non-extraction contexts. The morpheme glossed as QAGR in (23b) is an example of this kind of prefix. I am forced to assume that these markers are the spell-out of a different and lower head than the normal subject agreement head, but I must leave open for now the question of precisely what this head is.

5.2. Successive Cyclicity

In the discussion of Palauan above I focused on the morphological changes that extraction triggers on verbs whose *own subject* is extracted. As is well known, however, extraction in Palauan (and the related Austronesian language Chamorro) can have rather more exotic consequences —extraction of an argument across a number of clause boundaries typically triggers a morphological reflex on the verb of *every clause that is extracted across*. If the extracted argument is extracted from inside a clausal subject, then the verb selecting that clausal subject has the form it would have if the entire subject had been extracted. If, on the other hand, a *wh*-phrase is extracted from inside a clausal complement, then the verb selecting that complement has the form it would have if the entire complement were extracted.

(27) shows some typical examples of long-distance extraction in Palauan (cf. Georgopoulos 1991: 90–94). In (27a) a subject has been extracted from a subject clause, and hence both the matrix and embedded predicates show the realis form required by subject extraction. In (27b) an object has been extracted from a subject clause. In this case, then, the embedded predicate is irrealis, as required by object extraction, but the matrix clause is realis, since it is its clausal *subject* that has been extracted from. In (27c) an object has been extracted (relativized) from an object clause, and therefore both the lower verb *grow* and the higher verb *think* are both irrealis, as required by object extraction.

(27)   a.   a Mary$_i$ [a kltukl   [el kmo   ng-oltoir   er a John ___$_i$]]
                    R-clear COMP   R-3s-Im-love   P
            'Mary, (it's) clear that ___ loves John.'

       b.   a John$_i$ [a   kltukl   [el   l-oltoir   er   ngii$_i$ a Mary]]
                    R-clear   COMP IR-3-Im-love   P   him
            'John, (it's) clear that Mary loves him.'

       c.   a bung$_i$ [el   l-ulemdasu a del-ak   [el   l-omekeroul
            ___$_i$ a Mary er a sersel]] a mla   mad
            flower   COMP IR-3-think   mother-1s COMP IR-3-Im-grow
            P   garden-3s   R-PST R-die
            'The flowers my mother thought Mary was growing in her garden
            died.'   (Georgopoulos 1991)

Phenomena such as this have generally been referred to in the literature as *successive cyclic wh-agreement*, and they have been taken to provide striking evidence in favor of a successive cyclic movement analysis of long-distance extraction, according to which long-distance extraction consists of a number of steps of local extraction through intermediate Spec,CP positions (Chung 1982, 1994; Georgopoulos 1985, 1991). The logic of the argument is quite simple: the effect of long extraction on the form of a series of verbs can be straightforwardly accounted for if the path of extraction contains a series of positions which are local to each of those verbs. However, as we shall see below, there are other ways of accounting for the successive cyclic character of *wh*-disagreement in these languages.

Given the account I have suggested for *wh*-disagreement in cases of subject extraction in Palauan, an obvious question that arises is whether this account can be extended to account for the successive cyclic effects of extraction in Palauan or Chamorro. Here I give a brief sketch of how the successive cyclic effects might fit into the verb movement approach to *wh*-(dis)agreement.

I suggest that argument positions in Palauan and Chamorro are generally occupied by the null argument *pro*, and that the overt NPs and CPs that correspond to those argument slots are adjoined phrases, following the account of null subject languages in Barbosa 1995, which builds on Baker's approach to polysynthetic languages (Baker 1991, 1995).[20] As a result of the fact that clausal arguments occupy

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(20) Palauan and Chamorro allow null subjects and objects licensed by rich agreement. However, in suggesting that argument positions are normally filled by *pro* in these languages, I do not intend to imply that these languages show the syntactic properties of 'pronominal argument languages' documented by Baker (1995) and others, e.g. lack of binding asymmetries.

adjoined positions in these languages, then we predict that it should be difficult to extract phrases from inside them, given that extraction from adjuncts is generally impossible cross-linguistically, as exemplified for English in (28a–b). This restriction is commonly known as the Condition on Extraction Domains (CED), following Huang 1982. (29) illustrates the schematically problematic kind of extraction from an adjoined clausal subject.

(28) a. *Who did John get annoyed when Bill mentioned?
      b. *What word did you pull out your dictionary after reading?

(29)
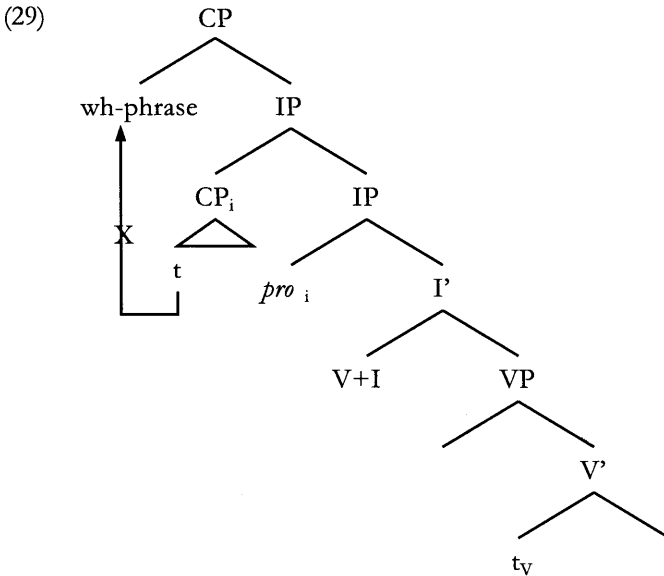
However, I suggest that this problem with extraction from an embedded clause may be circumvented if the clausal argument occupies an argument position rather than an adjoined position, and that the successive cyclic property of 'wh-agreement' in Palauan and Chamorro is a consequence of the need for clauses that are extracted from to occupy argument positions.

If an argument position is occupied by an overt phrase rather than by *pro*, then there should be no need for the verb to raise to adjoin to AGR in order to license *pro* (assuming that no other factor forces verb raising in these languages). Each clause that is extracted out of will be subject to the requirement that it occupy an argument position, in order to avoid a CED violation. This in turn predicts that each clause in the path of extraction will show the effects of not needing to license *pro* in an argument position. I suggest that it is this that accounts for the successive cyclic aspect of wh-disagreement in subject extraction in Palauan and Chamorro. Successive cyclic wh-(dis)agreement is therefore simply a consequence of the fact that wh-phrases cannot be extracted from adjuncts. (30) shows the structure I suggest for a well formed extraction out of a clausal subject with corresponding wh-disagreement. The clausal subject occupies SpecVP in (30), rather than being

adjoined to IP as in (29). As a result, there is no need for the verb to raise to adjoin to Infl in order to license a *pro* subject.[21] Therefore, agreement is not spelled-out on the verb.

(30)
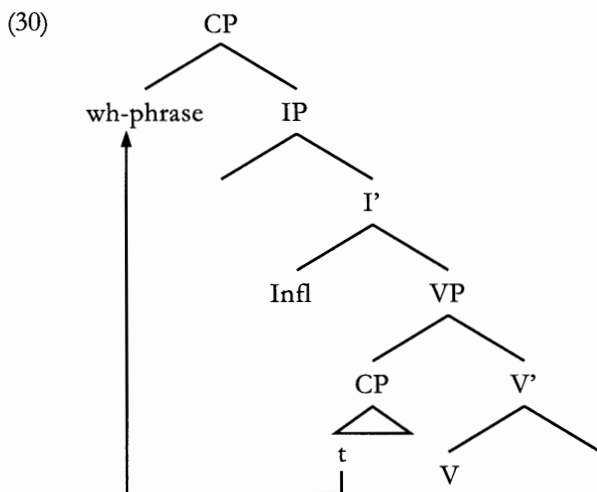
These remarks on successive cyclic *wh*-(dis)agreement are intended to be no more than preliminary. Clearly further work will be needed to test whether this is a generally viable approach to the phenomenon.[22]

(21) I assume here that the clausal subject that is extracted from occupies a VP-internal subject position, rather than Spec,IP. However, nothing crucial hinges on this assumption. All that matters is the claim that extraction out of a clausal subject prevents that subject from being in an adjoined position, and forces it to be in an A-position, in which it is possible to extract from inside the clausal subject.

(22) One example of the kinds of additional facts surrounding successive cyclic *wh*-agreement which need to be handled can be found in Chung 1994, where it is shown that *wh*-agreement in Chamorro is sensitive to whether the extracted phrase is referential/specific/D(iscourse)-linked in the sense of Cinque 1991 and Pesetsky 1987. In short, when the *wh*-phrase is specific (e.g., *which boys*) *wh*-agreement is only required inside the immediate clause that is extracted from, and is only optionally found in higher clauses along the path of extraction. Consider for example the minimal pair in (i–ii): in both cases the *wh*-phrase *which part in the car* is specific/referential and is extracted out of an embedded clause, but whereas *wh*-(dis)agreement is found in both the lower and the higher clause in (i), it is only present in the lower clause in (ii).

(i)   Hafa   na patti gi   atumobit malago'-mu   [*t* u-mafa'maolik   *t*]?
      what? L   part LOC car   WH[OBL].want-AGR   WH[NOM].AGR-be.fixed
      'Which part in the car do you want to be fixed?'

(ii) Hafa   na patti gi   atumobit malägu'   hao [u-mafa'maolik   *t*]?
      what? L   part LOC car   AGR.want you   WH[NOM].AGR-be.fixed
      'Which part in the car do you want to be fixed?'   (Chung 1994)

This fits straightforwardly with Chung's analysis of *wh*-agreement as a reflection of successive cyclic movement, given Cinque's arguments that non-specific *wh*-phrases must move successive cyclically whereas specific *wh*-phrases do not need to move successive cyclically (Cinque 1991).

However, given my claim that successive cyclic '*wh*-agreement' does not reflect successive cyclic *wh*-movement, but instead reflects the positioning of clausal arguments that is required in order to avoid CED violations, there must be some other reason for the effect of specificity on *wh*-agreement. One possibility is that in the same way as specific *wh*-phrases in English are immune to *wh*-island and superiority violations, specific *wh*-phrases in Chamorro are immune to CED violations.

Notice, however, one interesting consequence of this analysis. This approach suggests that what has been called successive cyclic *wh*-agreement in the past is merely a reflex of clausal arguments remaining in argument positions when they are extracted from, as opposed to a genuine process of *agreement* with an argument from a more deeply embedded clause that is 'passing through' the higher clause on its way to its ultimate landing site. If this is correct, then these phenomena in Palauan and Chamorro no longer provide such a compelling argument for successive cyclic *wh*-movement as they have been thought to provide.[23]

5.3. Object Disagreement

Thus far I have confined my attention almost entirely to *wh*-disagreement effects involving subject agreement and subject extraction. However, nothing in the account of *wh*-disagreement that I have outlined here implies that subject agreement is special in any way, and therefore we should expect to find similar disagreement processes affecting object agreement when objects are extracted.

It is not particularly surprising that disagreement processes involving object agreement are less common than subject disagreement effects, given that object agreement is cross-linguistically much rarer than subject agreement. Nevertheless, there are a number of promising candidates for object *wh*-disagreement. These include some languages that we have already discussed here —Yimas, Palauan, Chamorro and Kinande, and one that we have not yet discussed— Abkhaz (Anderson 1974). Some of these fit naturally into the verb movement account of disagreement effects; others do not, as we shall see.

The verb movement approach to disagreement effects makes one fairly clear prediction about where object *wh*-disagreement should and should not be possible, and this prediction essentially reduces to the Highest Head Generalization from (11) above. Given the Highest Head Generalization, if there are two agreement heads which must normally be overtly realized in order to facilitate licensing of two *pro* arguments, then only the *higher* of the two agreement heads should be able to be affected by *wh*-disagreement, for the following reason. *Wh*-disagreement occurs when a step of verb movement becomes unnecessary, because a position normally occupied by *pro* is occupied by a *wh*-trace. However, if there is a *pro* in a *higher* position in the clause which still needs to be identified by the overt realization of a higher agreement head, then the verb is still forced to move through the lower AGR head on its way to the higher AGR head.

Therefore, we only expect to find object extraction leading to loss of object agreement in situations where the object agreement head is the highest agreement

(23) See Dukes 1992 and Nakamura 1995 for related attempts to reanalyze the Chamorro *wh*-agreement facts in terms of how clausal arguments must reposition themselves in order to be extracted from. Dukes assumes that successive cyclic *wh*-agreement is a reflection of the fact that only non-finite clauses can be extracted from in Chamorro. Nakamura argues that successive cyclic *wh*-agreement reflects the fact that only topics can be extracted from in Chamorro. Clauses that are extracted from must be topicalized, and topicalization triggers topic-marking on the verb, in a manner familiar from other Austronesian languages like Tagalog and Malagasy. Both of these analyses share with my proposal the consequence that successive cyclic *wh*-agreement does not entail successive cyclic *wh*-movement.

head in a clause. In languages with nominative/accusative systems of case and agreement object agreement markers are usually more deeply embedded in the inflected verb than subject agreement markers (and therefore presumably structurally lower in underlying structures). For this reason we should not expect to find *wh*-disagreement resulting from object extraction in nominative/accusative languages. On the other hand, in ergative systems object agreement (absolutive) is quite commonly higher than subject agreement (ergative), so we expect to find instances of *wh*-disagreement triggered by object extraction in ergative languages.[24] How well does this prediction fare?

Yimas appears to be the most well behaved language from the perspective of this prediction. 3rd person arguments follow an ergative system of agreement marking in Yimas, with object agreement markers (absolutive) appearing outside subject agreement markers (ergative) in the verbal complex. Object extraction leads to *wh*-disagreement, as (31) shows. In (31a) there is no 3rd person singular affix on the verb marking agreement with the object *wh*-phrase, and similarly in (31b) there is no 3rd person paucal[25] affix marking the object argument.

(31)   a.   wara   ipa-na- am-n   b.   nawŋkt   pu-tpul
            what   1pl-DEF-eat-PRES   who-pc   3pl-hit
            'What are we going to eat?'   'Who (paucal) did they (plural) hit?'
                                                                        (Foley 1991)

The disagreement process found in Abkhaz (Dumézil 1967, Anderson 1974) is also consistent with this prediction. Abkhaz shows an ergative agreement system, and the Abkhaz disagreement alternation affects the outermost affix on the verb. The highlighted agreement prefix *y* in (32a) is an absolutive agreement marker, which agrees with the *direct object* of the sentence, in this case *the cat*. In (32b), however, the *y* prefix is no longer present, but the verb is otherwise unaltered.

(32)   a.   a-c°g°ə   a-la   y.a-ba.yt'   b.   a-c°g°ə   a-la   a-ba.yt'
            def-cat def-dog   3i-3i-see-past[26]   def-cat def-dog   3i-see-past
            'The dog saw the cat.'   'The cat saw the dog.'
                                                                        (Anderson 1974)

However, the agreement alternation found in Abkhaz has a different distribution across clause types from the *wh*-disagreement effects that we have seen in other languages, and for this reason I delay further discussion of Abkhaz until the next section.

The disagreement effect that is found in subject extraction in Chamorro has a counterpart in object extraction, and the agreement alternations are restricted in

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(24) For arguments that absolutive case/agreement is associated with a higher syntactic position than ergative case/agreement see Campana 1992, Murasugi 1992 and this volume, Bittner & Hale 1996, Phillips 1996b. For counterarguments see Bobaljik 1993.

(25) Yimas distinguishes singular, dual and plural number, and for NPs referring to humans also paucal number, which is used for groups of 3–7 people.

(26) The gloss *3i* stands for 3rd person irrational: nouns in Abkhaz are classified into one of 4 classes, masculine rational, feminine rational, irrational, and plural.

Chamorro to those tenses in which Chamorro follows an ergative case/agreement system. This much is consistent with my hypothesis about object disagreement. However, Chamorro is problematic in a couple of respects.

First, the morphological effect of object extraction is not obligatory, and it does not obviously involve loss of overt object agreement (although it is of course always possible to postulate phonologically null agreement markers). Compare the agreeing verb in the declarative in (33) with the verb nominalized by the infix *-in-* in (34a). (34b) shows that failure to nominalize in object extractions does not lead to ungrammaticality.

(33) Ha-fahan si Maria i sanhilo'-ña gi tenda
    E3s-buy M. the blouse-her loc store
    'Maria bought her blouse at the store.'

(34) a. Hafa f-in-ahan-ña si Maria gi tenda?
     what in-buy-her M. loc store
     'What did Maria buy at the store?'
   b. Hafa ha-fahan si Maria gi tenda
     what E3s-buy M. loc store
     'What did Maria buy at the store?'

Second, given the Highest Head Generalization, we expect there to be extremely tight restrictions on when a language can show both subject and object disagreement processes, because only the highest agreement head should be able to be affected by disagreement. Yimas shows both subject and object *wh*-disagreement, but as we saw this is due to the fact that either the subject or the object of a transitive verb is marked by the outermost agreement affix in different situations, given the person-based split-ergative system in Yimas. Chamorro and Palauan, on the other hand, do not show a person-based ergative split, and therefore it is not clear how both subject and object *wh*-(dis)agreement should be possible under the account I have been advocating here.

Kinande (Schneider-Zioga 1995) is anomalous in a different way. Kinande follows a nominative-accusative case system, and therefore the existence of *wh*-disagreement as a consequence of *subject* extraction is not surprising. The existence of a disagreement effect with *object* extraction is unexpected. However, Schneider-Zioga (1995) provides a candidate for *wh*-disagreement in Kinande object extraction. The object agreement marker is required in the declarative in (35a), and it is impossible in the object extraction in (35b).

(35) a. Yosefu a- ka- ha EBIkEnE ByO Marya
     J.   AGR-TENSE-give yams   AGR M.
     'Joseph is giving the yams to Mary.'
   b. EBIhI ByO Yosefu akaha (*ByO) Marya
     what CAGR J. gives (*AGR) M.
     'What is Joseph giving to Mary?'   (Schneider-Zioga 1995)

However, it may be misleading to characterize this process as object *wh*-disagreement, since it differs in a number of respects from the *wh*-disagreement phe-

nomena that we have observed elsewhere, and therefore it may not present a problem for the analysis of disagreement proposed here.

First, 'object agreement' in Kinande does not occur with all objects. It only occurs following the first object of a double complement construction, or following the subject of a small clause complement. Second, it is not an affix on the verb, but a morpheme which is either free-standing or a clitic on the NP *following* the NP that it marks, depending on the phonological shape of the following NP. The highlighted morpheme in (36) is an example of this object agreement marker.

(36)   Yosefu   a-   ka-   ha   EBIkEnE   ByO Marya
       J.   AGR-TENSE-give   yams   AGR M.
       'Joseph is giving the yams to Mary.'

Thus, it not clear that this morpheme should be associated with verb movement at all. It may be more appropriate to consider it as a structural case marker which is restricted to exceptional case marking environments (i.e. environments in which the verb case-marks but does not theta mark an NP). The fact that the case marker no longer appears when the NP that it marks is extracted is unsurprising.

French and Italian provide a candidate for 'object disagreement', which serves to clarify the prediction that derives from the Highest Head Generalization.[27] French and Italian are uncontroversially languages which follow a nominative/accusative system of case and agreement. Both languages show restricted agreement with objects. Although participles do not show agreement with post-verbal objects (37a, 38a), participles do show gender agreement with object clitics (37b, 38b).

(37)   a.   Jean a ouvert la porte.
            'John has opened.neutral the door.fem.'
       b.   Jean l'a ouverte.
            'John it-has opened.fem.'   (French)

(38)   a.   Gianni ha mangiato la mela.
            'Gianni has eaten.m (=neutral) the apple.fem.'
       b.   Gianni l'ha mangiata.
            'John it-has eaten.fem.'   (Italian)

However, in neither of these languages do participles agree with objects that have undergone *wh*-extraction (39ab). This may be viewed as an instance of object *wh*-disagreement in an accusative language, although the facts are clearly open to alternative accounts.[28]

(39)   a.   Que (est-ce que) / quelle porte a ouvert(*e) Jean?
            'What (is-it that) / which door has opened(*fem) John?'

(27) I am grateful to an anonymous reviewer for pointing out the relevance of these facts to my proposal.

(28) The distribution of object agreement in relative clauses is more complicated. In both French and Italian object agreement is degraded in relative clauses, but only in French relative clauses with postverbal subjects is object agreement judged to be as bad as object agreement in *wh*-questions (cf. 35a).

    b. Cosa / quale mela ha mangiato (*mangiata) Gianni?
        'What / which apple has eaten.m (*eaten.fem) Gianni?'

However, even if French and Italian do show object *wh*-disagreement, this is not a counterexample to my prediction, because object agreement in these languages is marked on participles, whereas subject agreement is marked on the finite auxiliary. Therefore it is entirely possible for the participial head to fail to pick up an AgrO head without this entailing the disappearance of overt subject agreement marking.

Summarizing this brief review of object *wh*-disagreement effects: the verb movement account of *wh*-disagreement makes clear predictions about where object *wh*-disagreement should and should not be possible cross-linguistically. As we have seen, some of the possible cases of object *wh*-disagreement fit straightforwardly with these predictions, others do not. I pointed out some problems that Chamorro and Kinande object *wh*-disagreement may raise, and reasons why these may not be problematic after all.

5.4. Closer Parallels between Adults and Children

The final loose end that I address arises from the claim that the disagreement effects described above in children and adults are actually consequences of the same syntactic process, absence of verb movement when conditions normally forcing verb movement are suspended. The question is the following: if what the children and the adults are doing is so similar, then surely we should find more direct parallels of adult *wh*-disagreement in children. We should find adult languages in which there is agreement in extraction contexts but loss of agreement in declaratives. And we should find child languages with alternations that look more like adult *wh*-disagreement, with perfectly agreeing declaratives and loss of agreement in extraction contexts.

The closest adult parallel to the alternation that we have seen in children is the disagreement effect in Abkhaz (Dumézil 1967, Anderson 1974) briefly mentioned above. The agreement alternation found in Abkhaz is shown in (40), repeating (32). The absolutive agreement marker *y* is present on the verb when the argument that it agrees with (the direct object) precedes the subject (40a), but is absent when the object is immediately adjacent to the verb (40b).

(40)   a. a-c°g°ə a-la   y.a-ba.yt' b. a-c°g°ə a-la   a-ba.yt'
           def-cat def-dog 3i-3i-see-past   def-cat def-dog   3i-see-past
           'The dog saw the cat.'   'The cat saw the dog.'
                                                         (Anderson 1974)

One possible analysis of this alternation would be to assume that in sentences like (40a) in which the object is not adjacent to the verb it has undergone topicalization, an instance of A-bar movement, whereas in (40b) the object is in an A-position. If this were the case, it would mean that the agreement marker *y* in Abkhaz is only present when the argument that it marks has undergone A-bar movement. This parallels what we have seen in child Dutch, German and Swedish in Section 3 above, insofar as the children show perfect agreement in questions and

topicalizations. The Abkhaz alternation differs from the children in that the loss of *y* in (40b) is *obligatory*, whereas the two-year olds seem to show *optional* agreement in declarative clauses.

Therefore Abkhaz provides a close adult analog of the disagreement effect that we have observed in children. I suggest a parallel analysis of this agreement alternation to the one given for agreement alternations in children. I assume that the order SOV reflects the basic word order of the language, and that the order OSV reflects topicalization of the object. I therefore suggest that verb movement as far as the object agreement head, which is higher than the subject agreement head, is required when the object is topicalized, but not when the object remains *in-situ*. However, I leave it as an open question why topicalizations should have such an effect on verb movement in Abkhaz.

The one remaining cell of the paradigm involves agreement alternations in children which parallel adult *wh*-disagreement effects, i.e. children who produce perfectly agreeing declaratives but show loss of agreement in *wh*-extraction contexts. I am unaware of cases of exactly this situation, but there is at least one report in the child language literature of a closely related alternation. Vainikka (1994) reports for two English children that they pass through a stage at which subject pronouns are reliably correct in declaratives (i.e. *I go*), but often incorrect in *wh*-questions (i.e. *where me go?*).[29] If subject case errors in child language are a reflection of deficient or unrealized agreement (as argued in Schütze & Wexler 1996 and Schütze 1997), then this alternation may reflect a *wh*-disagreement effect similar to what we have observed in adult languages.

However, this may be due to the relatively small number of child languages that have been examined in detail at this point.

6. Conclusion

So, to wrap up: I have tried to provide an idea of how we might go about solving two problems involving disagreement phenomena and language learning.

The first problem is one of learnability: how can children figure out the specific details of where *wh*-disagreement does and does not apply in their target language, without having to wait for the kind of input data that they may never encounter? Here I suggested that if the variations in where *wh*-disagreement applies are based on variations in verb movement which have clear morphological triggers, then children might even be able to figure out all the details of *wh*-disagreement in their target language with exposure to almost no questions at all.

The second problem was the question of why some two year olds seem to show an agreement alternation which is the mirror image of adult *wh*-disagreement effects. What I suggested here was that once we pay attention to the verb movement requirements of the particular languages where children show these effects, we see that the children are actually doing just the same thing as adults; they just happen to be doing it in languages whose verb movement properties pattern differently across the various construction types.

(29) Thanks to Carson Schütze for pointing out the relevance of this case.

One final comment: an aspect of this project which I find particularly encouraging is the fact that a new way of approaching a problem in the analysis of *adult* languages has emerged from the detailed study of *child* language development, the opposite of the manner in which studies of adult and child language typically interact.

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LOCATIVE SENTENCES AND RELATED CONSTRUCTIONS IN CATALAN: *ÉSSER / HAVER* ALTERNATION*

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1. Introduction

This article will illustrate the argument structure and the syntactic behavior of Catalan locative or existential verbs. It will also be concerned with the properties of the functional category Agreement-subject. Following Rigau (1991), it will be argued that Agreement-s can be split into two functional categories: Agreement-person and Agreement-number. Agreement-person is the category that licenses nominative case and, in some circumstances, dative case. Agreement-number was defined in Rigau (1991, 1994) as the category that manifests the relation between the verb and its prominent argument; namely, Agreement-number is the functional category where the Extended Projection Principle feature (Chomsky 1995) has to be satisfied. Therefore, a divorce is assumed between the functional category that licences the case properties of the subject of the sentence and the category that provides a prominent argument for the sentence. Generally, the external argument of the predicate is the DP that checks nominative case in Agreement-person and the EPP feature in Agreement-numberP. Nevertheless, in the sentences I will analyze, the argument that checks its case in Agreement-person may be different from the argument that checks the EPP feature in Agreement-NumberP.

Catalan has two locative or existential verbs: the verb *ésser* (or *ser*) 'be' and the verb *haver* 'have'. The verb *haver* appears obligatorily with the clitic *hi*: *haver-hi*. In essential accordance with Bach (1967), Fillmore (1968), Freeze (1992) and Kayne (1993), it will be argued that the Catalan locative verb *haver-hi* is an instance of the light verb *ésser* to which an abstract preposition has been incorporated. Both verbs act as a host verb, in the sense that they are in the sentence to help the real predicate. The predicate in locative sentences is a preposition, an abstract or overt preposition.

In Modern Catalan, the verb *haver* 'have' without the clitic *hi* is not a main verb, but rather an auxiliary verb, as shown in (1).

(1)   La Maria ha comprat un llibre
       Mary has bought a book

Contrary to French or Italian, Catalan —like Spanish— uses the verb *tenir* 'have' in possesive constructions, as shown in (2).

(2)   a. Marie a un chien   (French)   b. La Maria té un gos
          Mary has a dog   Mary has a dog

Both Catalan locative verbs may appear with a definite DP, as shown in (3). Therefore, contrary to French or Spanish, there is no definiteness effect in sentences with the verb *haver-hi* 'have' in the majority of Catalan dialects.

(3)   a. Hi havia el president   b. El president hi era
          cl. had the president   the president cl. was
          'The president was here/there'   'The president was here/there'

In the case of the predicate *haver-hi*, the locative clitic *hi* is obligatory. Therefore, if a locative PP or AdvP appears in the sentence, it will have to occupy a peripheral position (a Topic position), and it will be licensed through the clitic *hi*, which will act as a resumptive pronoun. See the sentences in (4).

(4)   a. A la reunió   hi havia el president
          at the meeting cl. had the president
          'The president was at the meeting'
      b. Hi havia el president, a la reunió
          cl. had   the president, at the meeting
          'The president was at the meeting'
      c. *Havia el president a la reunió
          had   the president at the meeting
      d. *A la reunió havia el president
          at the meeting had the president

In (4a) and (4b) the PP *a la reunió* 'at the meeting' is in the left Topic position and in the right Topic position, respectively. Constructions (4c) and (4d) are ungrammatical because of the lack of the clitic *hi*.

In the case of the verb *ésser* 'be', the locative does not necessarily have to be expressed by the clitic *hi*, but rather the verb may coappear with a PP or an AdvP, as shown in (5). Construction (5c) is ungrammatical because of the lack of a locative element.

(5)   a. El president era a la reunió / allà
          'The president was at the meeting/there'

b. El president hi era   c. *El president era
   the president cl. was   the president was
   'The president was here/there'

As shown in Rigau (1994), the fact that the locative argument appears as a clitic in the sentences with the verb *haver* 'have' but not necessarily in the sentences with the verb *ésser* 'be' is not the only difference between these two verbs. In spite of the lack of definiteness effect shown in (3), the occurrence of one verb or the other is not optional. See the sentences in (6), where the complementary distribution of these verbs may be observed.

(6)   a. Hi havia el president
          cl. had the president
          'The president was here/there'
       b. *Hi era el president   *versus*   c. Hi era, el president
          cl. was the president   cl. was, the president
       d. El president hi era
          the president cl. was
          'The president was here/there'
       e. *El president hi havia   *versus*   f. EL PRESIDENT hi havia
          the president cl. had   the president cl. had
                                               'THE PRESIDENT was here/there'

Sentence (6b) contrasts with the grammatical sentence (6c), where the DP *el president* is right-dislocated, whereas (6e) contrasts with the grammatical sentence (6f), where the DP receives emphatic focus interpretation.

In order to account for the semantic affinity between the verbs *haver-hi* 'have' and *ésser* 'be' that we have observed in (3), I will argue that their lexical relational structure or argument structure are similar.[1] Following Freeze (1992) and Kayne (1993), as a starting point I use the assumption that the lexical relational structure of *haver-hi* and *ésser* is formed by a preposition. The verbs *ésser* and *haver* have an auxiliary function within the lexical relational structure, in the sense that their function is to help the preposition. A preposition may not be adjoined to a verbal affix, therefore a verbal form is necessary. In the case of *haver-hi* sentences, the preposition is an abstract preposition of 'central coincidence'. According to Hale (1986) and Hale & Keyser (1993a, b), a preposition of central coincidence is a preposition that relates one entity (i.e., place) with another (i.e., a thing, a substance...).[2] In *ésser* sentences, the preposition is an overt locative preposition of central coincidence. Because of the

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(1) According to Hale & Keyser (1993a, b and this volume), the lexical relational structure is a representational level prior to overt syntax. Chomsky (1993: fn. 18), however, argues that operations on such structures are syntactic operations.

(2) The English preposition *with* or its Catalan equivalent *amb* are used as a preposition of central coincidence in (i) —from Fillmore (1968: fn. 49)— and (ii).

    (i) a. Mary has the children with her   (ii) Els nens són amb la Maria
                                               'The children are with Mary'
        b. The children are with Mary

The preposition *with* / *amb* in (i) and (ii) expresses a relation of coincidence, or contiguity, between *the children* and *Mary*. See also Guéron (1994).

presence of an overt or covert central coincidence preposition, locative sentences lack a dynamic event; they are stative sentences.

The overt / covert character of the central coincidence preposition in the argument structure will determine: (1st) the complementary distribution of these verbs, as shown in (6), and (2nd) the personal / impersonal character of the sentence.

I argue that if the verb is *ésser* 'be', Agr-o will be inactive because of the properties of this verb, which has neither accusative nor partitive case properties.[3] However, with the verb *haver-hi*, it is Agr-s which will remain inactive. Depending on dialectal variation, this inactivity may be complete or partial. In (7a), a sentence belonging to Northwestern Catalan, no agreement is manifested between the DP *els estudiants* 'the students' and the verb, while in (7b), a sentence belonging to Central Catalan, number agreement is manifested.

> (7) a. Hi ha els estudiants   b. Hi han els estudiants
>   cl. has the students   cl. have the students
>   'The students are here/there'   'The students are here/there'
>   (Northwestern Catalan)   (Central Catalan)

Following Chomsky (1993), I assume that structural case properties depend on the characteristics of Tense and Verb. The case property of T becomes overt only when T combines with the person feature of Agr-s, in the same way that structural case on V becomes overt when V is adjoined to Agr-o. Adopting the claim in Kayne (1989: fn. 1), I assume that a [–PERSON] Agr-s is not able to manifest the nominative property of T.

2. Lexical relational structure of *haver- hi*

Let us concentrate first on sentences with the verb *haver-hi*. Following Kayne (1993) and Hale & Keyser (1993b: fn.7), I have assumed that the verb *have / haver* corresponds to a verbal realization of an abstract preposition of central coincidence. The lexical relational structure assigned to *have* for a sentence like (8) is represented in (9)[4]:

> (8) Mary has the book   (9)

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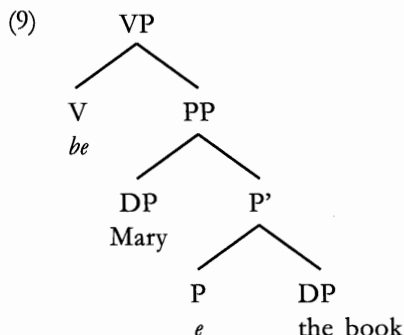
(3) See Kayne (1985, 1989).

(4) As shown in (2), Catalan does not have a possessive *have*. The verb *tenir*, not *haver*, appears in the Catalan translation of (8): *La Maria té el llibre*.

According to Kayne (1993), *have* is an instance of the light verb *be*, to which the abstract preposition has been incorporated. This preposition, defined as a central coincidence preposition, expresses the relation in which one entity is associated or in contact with another. The meaning of this abstract preposition could be defined more or less as 'with' (see fn.2). In a sentence like (8) the DP *the book* corresponds to an entity entering into the interrelation established by the abstract preposition. Therefore a subject is required to complete the interrelation. In (8), this subject is *Mary*. The verb in (8) merely acts as host for the preposition.

The lexical relational structure I assign to the Catalan verb *haver-hi* in (3a) —repeated in (10)— is represented in (11)[5]:

(10)   Hi havia el president
        cl. had the president
        'The president was here/there'

(11)
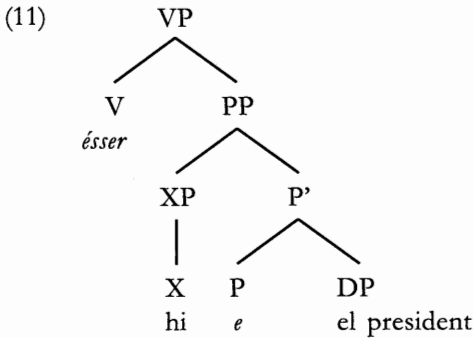
In (11), the head of the PP is a non-overt preposition that needs to incorporate another head in order to be licensed, as shown in (12). The spell-out of the verb with an incorporated preposition is the verb *haver* 'have', as in (9).

(12)

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(5) XP stands for the projection of *hi*, traditionally considered an adverbial pronoun. It will be argued below that this clitic exhibits a double nature: D/P.

The complement of the central coincidence preposition, the DP *el president* in (12), corresponds to the entity in the interrelation established by the abstract preposition. The element in the subject position, the clitic *hi*, corresponds to an entity that completes the interrelation. Roughly, the complement of the preposition corresponds to the entity possessed, while the specifier corresponds to the possessor. Actually, it is the presence of the clitic *hi* that lends "locative / existential" meaning to sentences with the verb *haver-hi*. The sentence expresses either a temporary or enduring association between an entity (expressed by a DP, a NP or a small clause[6]) and some point in space or in time. This point may be the place or the time of the utterance or discourse.[7]

As a consequence of the incorporation of the abstract preposition to the verb, as in (12), the host verb gets case properties. Actually, the preposition triggers the case properties of the verb. Unlike the verb *ésser*, the verb *haver* is able to license either the partitive or the accusative case.[8] That the verb *haver* licenses partitive case is visible in (13), where a bare-NP or a partitive clitic appears (see Belletti 1988).

(13) a. No hi ha pa   b. No n'hi ha
          not cl. has bread   not cl. (=of it) cl. has
          'There is no bread'   'There isn't any'

The fact that the verb *haver* is able to check the accusative case in sentences like (14a) is not easy to show because of the impossibility of an accusative clitic appearing in the sentence. See (14b), which is ungrammatical.

(14) a. Hi havia el president   b. *L' hi havia
          cl. had the president   cl.$_{acc}$ cl. had
          'The president was here'

The problem may be expressed as follows: Why is it that (14b) may not exist as an equivalent of (14a), if I assume that the DP in (14a) is accusative? I will broach this matter in section 6.1.

First, however, I will analyze the consequences of the presence of the pronoun *hi* as the subject of the prepositional predicate in the argument structure of the verb

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(6) In (i) the complement of the abstract preposition is a small clause:

(i) Hi ha [$_{SC}$ la porta oberta]
     cl. has the door open
     'The door is open here/there'

(7) Closely related languages, such as Spanish, Galician and Asturian have existential constructions with the same verb without a visible locative clitic pronoun. Following Longa, Lorenzo & Rigau (1995), I assume that these languages have an empty D/P element in existential constructions with *haber* 'have'.

(i) a. [$_{D/P}$ hi] havia alguns estudiants   b. [$_{D/P}$*e*] había algunos estudiantes
         cl. had   some students   cl. had   some students
         'There were some students'   'There were some students'

(8) In Modern Catalan some reminiscences of the old transitive predicate *haver* in the possessive meaning still remain in sentences like (i), where an accusative clitic is present.

(i) Això, no ho podràs pas haver.
     this not it can   neg. have
     'You will not be able to have it'

haver-hi. The clitic *hi*, referred to as an 'adverbial pronoun' by traditional Catalan grammarians, usually stands for a PP. From an etymological point of view, the Catalan clitic *hi* comes from the Latin demonstrative *hic* and the Latin adverb *ibi*. Therefore, it exhibits a double nature: It is a determiner and a preposition (see Longa, Lorenzo & Rigau 1995). I assume that the structure of the clitic *hi* in (11) is the same as that in (15), namely, XP in (11) stands for DP/PP.

(15) $[_{DP/PP} [_{D/P} hi]]$

The case of the clitic *hi* selected as the subject of the abstract preposition of central coincidence is dative (or oblique).

In some Catalan dialects one can also find the use of the inanimate clitic *hi* as a dative clitic (see Rigau 1982). However, for the majority of speakers the 3rd person singular dative clitic is *li*, regardless of its [+/− animate] property. The two dialectal variations are shown in (16).[9]

(16)   a. Al teu cotxe, hi cal una roda de recanvi
            to your car,   cl$_{dat}$ is necessary a spare tire
            'Your car needs a spare tire'
        b. Al teu cotxe, li cal una roda de recanvi
            to your car,   him$_{dat}$ is necessary a spare tire
            'Your car needs a spare tire'
        c. A la jaqueta hi   falta un botó   d. A la jaqueta li falta un botó
            to the jacket   cl. lacks a button.   to the jacket   cl. lacks a button.
            'The jacket is missing a button'   'The jacket is missing a button'
        e. Al prestatge de dalt hi sobren llibres
            to the shelf of top   cl. are-too-many books
            'The top shelf has too many books'
        f. Al prestatge de dalt   li sobren llibres
            to the shelf of top   him$_{dat}$ are-too-many books
            'The top shelf has too many books'

However the inanimate dative clitic *hi* in existential sentences with the verb *haver-hi* cannot be substituted by the animate clitic *li*, as shown in (17). *Haver-hi* has been considered a quasi-lexicalized form.[10]

(17)   a. Al menjador,   hi ha   una capa de pintura
            to the dining-room, cl has   a   coat of paint
            'There is one coat of paint in the dining room'

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(9) Catalan impersonal existential sentences like those in (16) follow the Latin pattern shown in (i).

(i) Civi Romano   licet   esse Gaditanum   (Cic. *Balb.* 29)
     citizen$_{dat}$ Roman$_{dat}$ is-permitted to-be Gaditan$_{acc}$
     'A Roman citizen may become a citizen of Gades'

Sentences of this type have a verb that means modality, an object —the infinitive clause (*esse Gaditanum*)—, and a dative subject (*civi Romano*).

(10) For the crosslinguistic relationship between locative case and dative or benefactive case, see Baker (1988: 236f)

    b. *Al menjador,   li   ha   una capa de pintura
        to the dining-room, him_{dat} has a   coat of paint

In spite of this difference, I assume that the way to check case for the subject clitic in (17a) is essentially the same as for the subject clitic in (16). The clitic *hi* in (17a) checks its oblique or dative case with a [–person] Agreement head.[11] In a case where the clitic *hi* moves to a specifier position of a [+person] Agr-s, the derivation will crash either because this clitic does not manifest nominative case, or because the verb does not show person feature to check in a [+person] Agr-s.

I assume that the subject of the PP in (11) becomes the subject of the sentence and renders it impersonal. As we will see further on, because of the presence of the pronoun *hi* in the lexical relational structure, the sentence derivation will crash if the verb *haver* 'have' is adjoined to a [+person] affix in the structure below the word level, whereas the derivation may converge if the V is adjoined to a [–person] affix. It is possible to use the non-auxiliary verb *haver* 'have' in any tense or mood, but it always appears in impersonal sentences. This means that the person shown by the finite verb *haver* is morphologically the third person because this is the unmarked form in Catalan.

The question now arises as to where the dative or oblique case of the clitic *hi* is checked in sentences with *haver-hi*. I propose that the dative case in dative subject constructions is similar to a structural case in that it needs to be checked in a Spec-Head relationship.[12] This head is the same Agreement head where a subject checks the nominative case. However, the Agreement head is a [–person] Agreement, because the sentence in (14a) is impersonal. Given that, I assume that when +T adjoins to a [–person], Agreement triggers dative case.[13] This case will be checked against the DP in the specifier position. Therefore, dative case may be considered a default case. Indeed, the assignment or checking of dative case is a familiar strategy in Romance constructions expressing a relationship of possession or existence.[14]

    (18)   a. [+T, +Person Agr] checks nominative case
           b. [+T, –Person Agr] checks dative case

Because of its dative subject, the verb *haver-hi* may only be licensed in structures with a [-person] Agr-subject. Consequently, the nominative case cannot be checked in these structures. This explains why the presence of a nominative pronoun like *jo* 'I' or *ella* 'she' is not possible in structures with *haver-hi*, as shown in (19).

    (19)   a. *Hi ha / he jo   b. *Hi ha ella
           cl has / $have_{1\text{-sing}}$ I   cl. has she

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(11) On the similarity between dative and locative elements, see Jespersen (1924: chapter XIII)

(12) See Collins & Thráinsson (1993) for other contexts where dative case has to be considered a structural case.

(13) A third situation is possible: [–T] checks null case.

(14) See Kayne (1993, 1994). According to Tremblay (1991), dative case is the default case in French. Dative case rather than genitive case is the unmarked strategy to express possession in French.

3. Agreement between *haver* and DP/NP

Our proposal that the DP object in existential constructions is accusative allows us to explain the lack of agreement between the verb and the DP in the Northwestern Catalan dialect, where sentences like (20a) are grammatical, and sentences like (20b) are ungrammatical.

(20)   a.   Hi ha els estudiants (= 7a)   b.   *Hi han els estudiants
            cl. has the students   cl. have the students
            'The students are here/there'   'The students are here/there'
            (Northwestern Catalan)

However, other Catalan dialects are problematic for the assumptions of this analysis. As we have already seen, in Central Catalan, agreement between the verb and the DP is grammatical. See (21b), where the verb is plural in agreement with the DP.

(21)   a.   *Hi ha els estudiants   b.   Hi han els estudiants (= 8b)
            cl. has the students   cl. have the students
            'The students are here/there'   'The students are here/there'
            (Central Catalan)

It is my intention to propose that it is possible to view the clitic *hi* in the specifier of an Agr-s position, and to offer an explanation as to why this agreement between the verb and the DP is grammatical in some dialects if person agreement is distinguished from number agreement. In Rigau (1991), it was hypothesized that Agr-s may be split into two functional categories: an Agreement-person node and an Agreement-number node, as shown in (22).

(22)   [$_{CP}$ ...[$_{NumP}$ ....[$_{PersP}$ ....[$_{TP}$....[$_{AgrOP}$... [$_{VP}$]]]]]]

Person is the functional category that licenses the nominative case (and, under certain conditions, dative case) when +T is adjoined to it, whereas Number is the functional category where the Extended Projection Principle feature (or DP feature) is satisfied (see Chomsky 1995). Specifically, agreement number manifests the relationship between the verb and its prominent argument, namely, the element able to establish a spec-head relationship with the verb in Agreement-number Phrase. In all Catalan dialects, the EPP feature and the case feature are weak. As a result, the checking operation is delayed until the LF. Generally, the external argument of the predicate is the element that is interpreted as the prominent argument of the predicate; it is the DP that moves to the specifier position of NumP in order to agree with the verb.[15]

In structures with the verb *haver-hi*, the dative subject is not able to satisfy the EPP feature (or DP feature) of NumberP because of its prepositional properties, that

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(15) Following Solà-Pujols (1992), I argue that, when the subject DP appears in preverbal position, it is in a left-dislocated position and a *pro* is in the internal subject position, as shown in (i), where the *pro* acts as a resumptive pronoun.

(i)   a.   *La Maria parla*   b.   [La Maria [$_{CP...}$ parla *pro*]]
            'Mary speaks'

is, because of its D°/P° nature, and because of the lack of number property in this clitic.[16] Therefore, the dative clitic cannot express number agreement with the verb. In order to satisfy the EPP feature in sentences with *haver-hi*, Catalan dialects follow two different strategies. Northwestern Catalan follows the strategy of French whereby an expletive pronoun is present in the impersonal sentences, as shown in (23).

(23) a. Il   y   a   des étudiants   b. pro$_{expl}$ hi ha   estudiants
         expl cl. has some students   expl   cl has students
         'There are some students'   'There are some students'
         (French)

In contrast to Northwestern Catalan and French, in Central Catalan no expletive pronoun is present in *haver-hi* sentences. In Central Catalan, when the impersonal sentence has a DP/NP, that is, an element able to express number agreement, this element must agree with the verb. The expletive will appear in Central Catalan only when no argument can agree in number with the verb, as in (24).

(24) a. pro$_{expl}$ plou   b. pro$_{expl}$ sembla que en Joan és aquí
         'It rains"   'It seems that John is here'

As noted in Rigau (1991), in Northwestern Catalan, the absence of the functional property of person in Agr-s correlates with the absence of the number property, whereas in Central Catalan this is not necessarily the case. As we will see in section 6, the behavior of *haver-hi* is not an isolated case, but rather one instance of a phenomenon that is quite common in Catalan and other Romance languages. This phenomon may be observed in (25), which contains sentences with the arbitrary clitic *se* 'one', and in (26), which has sentences with an unaccusative verb.

(25) a. Es pot obrir les finestres.   (Northwestern Catalan)
         [+T, −P, −Num]
         cl.$_{arb.}$ may$_{3rd,sing}$ open the windows
         'The windows may/can be opened'
      b. Es poden obrir les finestres. (Central Catalan)
         [+T, −P, +Num]
         cl.$_{arb.}$ may$_{3rd,pl}$ open the windows
         'The windows may/can be opened'

(26) a. Ve pluges.   b. Vénen pluges.
         [+T, −P, −Num]   [+T, −P, +Num]
         comes showers   come showers
         'Showers are coming'   'Showers are coming'
         (Northwestern Catalan)   (Central Catalan)

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(16) In structures with other existential verbs like those in (16), *caldre* 'to be necessary', *faltar* 'to lack', etc., the dative subject is not able to satisfy the EPP feature (or DP feature) of NumberP because of its prepositional properties, and its inherent morphological features. I assume that number property of clitics is bound to their other morphological features. Therefore, the dative clitic cannot express number agreement with the verb. In order to satisfy the EPP feature, sentences with *caldre* follow the general pattern of other constructions in which the incorporation of an empty central coincidence preposition into a verb takes place (see Rigau 1996).

In Northwestern Catalan, number agreement is only possible if the argument checks the nominative case. Therefore, number agreement is not possible in (25a) or in (26a). However, in Central Catalan, if the verb has a nominal argument, this argument is interpreted as the prominent argument whether the sentence is personal or impersonal, and it has to satisfy the EPP or DP feature of the sentence. Prominence is expressed through number agreement between the verb and the argument. In accordance with this, the sentences in (25b) and (26b) are as impersonal as their corresponding Northwestern Catalan counterparts. The arguments show the same case: accusative in the structures in (25) and partitive in those in (26). The only difference is that in the Central dialect the nominal argument of the predicate clearly shows that it acts as the prominent argument of the predicate. Therefore, what distinguishes Northwestern Catalan sentences from Central Catalan sentences is the agreement in number —not in person— between the DP and the verb.

Therefore, in Northwestwern Catalan the expletive *pro* is inserted to satisfy the EPP feature of Agreement-number, whereas in Central Catalan the accusative or partitive DP[17] moves to the specifier position in Number Phrase to check its number feature and thus satisfy the EPP.

(27)   a. ...$[_{NumP}$ $[pro_{expl}]$ Num° $[...[_{Agr-oP}$ DP Agr-o...   (Northwestern Catalan)
       b. ...$[_{NumP}$ $[DP_i]$ Num° $[...[_{Agr-oP}$ t_i Agr-o...   (Central Catalan)

Why do these dialects show such different behavior when the sentence is impersonal? What prevents the insertion of the expletive element in Central Catalan? What prevents the accusative or partitive DP from rising to the specifier of the Number Phrase in Northwestern Catalan? The answer lies in the impersonal property of the sentences. In Northwestern Catalan [–Person] Phrase is selected by [–Number] Agreement, whereas in Central Catalan [–Person] Phrase is selected either by [–Number] Agreement or by [+Number] Agreement. In other words, the expletive pronoun is the last resort in both dialects. It appears in order to satisfy the EPP feature when Number Agr is negative.

A positive Number head always attracts a DP. A negative one does not. Therefore, Central Catalan shows a more restrictive use of the expletive pronoun in impersonal sentences than Northwestern Catalan does. In Central Catalan the EPP necessarily has to be satisfied whenever possible by a DP, and in this case Number head is positive. Only when there is no DP (or NP) present in the sentence may an expletive pronoun be inserted. Therefore, when an accusative or partitive DP is in an impersonal structure and the expletive pronoun is inserted, the derivation crashes. In contrast, in Northwestern Catalan the expletive pronoun is inserted when no nominative DP is in the sentence. Because of the negative feature of Number in impersonal structures, only an expletive pronoun can satisfy EPP.

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(17) Following Longobardi (1994), I assume that a bare NP may be analyzed as a DP with a covert determiner.

(28)   a. *Northwestern Catalan:* [–Person] Phrase is selected by [–Number] Agr.

      b. *Central Catalan:* [–Person] Phrase is selected either by [–Number] Agr, or by [+Number] Agreement.

(29)   a. [+Number] Agr attracts a DP to satisfy the EPP feature.

      b. [–Number] Agr satisfies the EPP feature with pro_{expl}

4. Lexical relational structure of *ésser*

Let us now analyze the locative verb *ésser* 'be'. (31) illustrates the lexical relational structure I assign to *ésser*. Its argument structure diverges from the argument structure of *haver* in its lack of preposition incorporation. In (30), whose lexical relational structure is (31), the preposition is an overt locative preposition. It does not then need to be adjoined to the verb. This preposition is a locative preposition of central coincidence —e.g., *a* 'in', *en* 'in', *damunt* 'on', *dins* 'within', etc.—, and selects one entity as its subject and another entity as its object. A locative preposition without a central coincidence meaning, like *des de* 'from' and *a través* 'through' is not possible in (31).

(30)   a. El president era a la reunió
        'The president was at the meeting'

      b. El mal és a l'estómac
        the pain is in the stomach
        'The pain is in the stomach'

      c. L'estómac és dins l'abdomen
        the stomach is within the abdomen
        'The stomach is in the abdomen'

      d. *El president és des de la reunió
        the president is from the meeting

      e. *El mal és a través de l'estómac
        the pain is through the stomach

(31)

```
                VP
              /    \
            V        PP
           era      /  \
                  DP      P'
                  el     /  \
              president  P    DP
                         a   la reunió
```
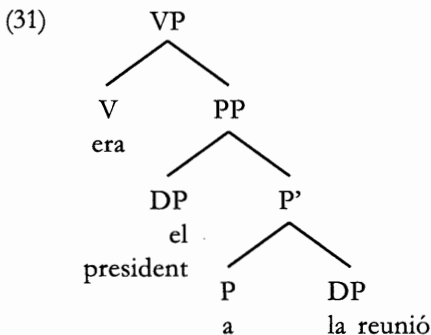
I consider the verb *ésser* 'be' as a poorly specified element. It acts as an auxiliary verb in the sense that it does not act as a predicate. It is in the sentence in order to

host the tense features that the sentence needs to license the predication. The real predicate is the P'. Because of the lack of incorporation of the preposition, the verb remains caseless. This means that the case properties that were activated in the verb *haver* are not activated if the verb is *ésser* 'be'. In contrast to the verb *haver*, the verb *ésser* cannot assign partitive case and, although it is raised to Agr-o, it cannot license the accusative case. Consequently, Agr-o will be inactive. The DP *el president* in (30a) manifests nominative case. Therefore, a nominative pronoun may appear in *ésser* 'be' sentences, as shown in (32a) and (32b).

(32)   a.   Ell és a la reunió   c. *Allà, no   hi són nens
            'He   is at the meeting'   there not   cl. are boys
       b.   Jo hi sóc (, a la reunió)
            I   cl. am   (at the meeting)
            'I am here/there'

Sentence (32c) is ungrammatical because the bare-NP cannot receive partitive case. In (32b) the clitic *hi* stands for the PP. It acts as the predicate.[18]

5. Complementary distribution of the verbs *haver-hi* and *ésser*

The locative verbs *haver* and *ésser* in Catalan dialects show a complementary distribution. Compare the sentences in (33) and (34). The sentences in (33) belong to Alguerese, the Catalan dialect spoken in the island of Sardinia, and the sentences in (34) belong to Central Catalan.[19]

(33)   a.   Hi ha un home   (34)   a. Hi ha un home
            cl. has a   man   cl. has a   man
            'There is a man here'   'There is a man here'
       b.   Hi havia llibres   b. Hi havien llibres.
            cl. had   books   cl. had$_{pl.}$ books
            'There were some books here'   'There were some books
                                                here'

---

(18) Unlike the DP/PP in *haver-hi* sentences, *hi* in (32b) does not move to the specifier position of Agr-pers before moving, as a head, to the functional category for clitics. It is not a 'subject clitic'. It acts as the predicate of the sentence.

   Following Kayne (1994), I assume that Romance pronominal clitics are heads that adjoin to a functional head. It is interesting to note that Catalan offers evidence that pronominal clitics may not be adjoined to stems or finite verb forms. Clitics in Catalan may be separated from a finite verb by the adverbial element *ben*, which means "completely" or "very much". Because of its meaning, this adverb appears with action verbs, not with stative verbs like *haver-hi* 'have' or *ésser* 'be'. Consider the sentences in (i):

(i)   a.   T'ho ben assegurem.   c. Us hi ben acostumareu.
           cl. cl. adv. garantee   cl. cl. adv. will-accustomed
           'We fully guarantee it to you'   'You will become completely accustomed to it '
      b.   La ben perdono.
           cl. adv. forgive
           'I completely forgive her'

(19) A different analysis of the Alguerese and Central Catalan data based on the chomskyan economy conditions, was proposed in Rigau (1994).

c. *Hi havia/havien los hòmens   c. Hi havien els homes
cl. had_{sing.}/had_{pl.} the men   cl. had_{pl.} the men
'The men were here'   'The men were here'
(Alguerese Catalan)   (Central Catalan)

The sentences in (33) show that in Alguerese, the verb *haver-hi* appears only with non-definite NPs and that there is no agreement between the NP and the verb. The sentences in (34) show that in Central Catalan the object of *haver-hi* may be a DP. From this, we can conclude that in Alguerese the verb *haver-hi* has only partitive case, whereas the same verb in Central or Northwestern Catalan has partitive and accusative case.

Compare now the Alguerese sentences with the verb *ésser* in (35), and the sentences with the same verb in (36), belonging to Northwestern and to Central Catalan.

(35) a. Hi era el   president   (36) a. *Hi era el president
         cl. was the president   cl.   was the president
         'The president was here'   b. El president hi era
      b. El president hi era   the president cl. was
         the president   cl. was   'The president was here'
         'The president was here'   (Northwestern & Central Catalan)
         (Alguerese Catalan)

Examples (35a) and (36a) show that what is ungrammatical in Northwestern and Central Catalan is grammatical in Alguerese. Why may the subject of the verb *ésser* be postverbal in Alguerese, but not in other dialects? The answer probably has to do with some kind of 'economy conditions'.

According to the null theory of phrase stress presented by Cinque (1993), in languages like Italian, the greatest prominence of the sentence is, under normal conditions, the most deeply embedded (surface) constituent, that is, the rightmost phonologically-realized constituent. If this is the case, in (35a) the most prominent stress of the sentence falls on the DP *el president*. Because of this, this constituent receives a focus reading (see also Bonet 1990).

The reason why Alguerese allows the nominative DP to check its case from the postverbal position in the sentences with the verb *ésser* 'be', whereas Northwestern and Central Catalan do not allow it, may be that Northwestern and Central Catalan have the possibility of having the DP in final position, in a focus reading position through the other locative verb, *haver-hi* 'have', as shown in (37) where the DP is the most deeply embedded constituent.

(37)   Hi havia el president   (Northwestern & Central Catalan)
       cl. had the president
       'The president was here/there'

In Alguerese, (37) is not possible, because the verb *haver-hi* does not have the accusative case property. Therefore, (35a) is allowed in Alguerese, because it is the only way to focalize the DP in locative sentences. Specifically, what prevents Northwestern and Central Catalan from having sentences like (35a) is the existence of (37).

Apparently, we are faced with a last resort operation. The more economic derivation blocks the more marked or more expensive derivation. However, in Alguerese the more expensive derivation is licensed because the 'cheaper' derivation does not exist. Nevertheless, the problem lies in proving that the derivation of (35a) is more expensive than the derivation of (35b). They are non-equivalent derivations. Their lexical elements are different, given that I assume that when the subject DP appears in preverbal position, it is in a left-dislocated position and a *pro* is in the internal subject position acting as a resumptive pronoun (see fn. 15). Consequently, the derivations cannot be compared. In fact, this phenomenon might be related to the phenomena governed by the so-called Avoid Pronoun principle (Chomky 1981: 65). The contrasts shown in (33)-(34) and in (35)-(36) are similar to the contrast shown in (38) and (39), where (38a) is impossible given the alternative option (38b), a structure with a control verb. However, when the control structure is not possible, for instance, in sentences with the verb *dir* 'say', then the reference of the pronoun *ell / pro* may be the same as the subject of the main sentence, as shown in (39). These are cases related to the Avoid Pronoun principle (Chomsky: 1981: fn. 45).

(38)   a.   *En Pere$_i$ no intenta que ell$_i$ /*pro$_i$* guanyi
          Peter   not tries   that he /*pro* wins$_{subjunctive}$
      b.   En Pere no intenta PRO guanyar
          Peter   not tries   PRO to win
          'Peter does not try to win'

(39)   a.   En Pere$_i$ no diu que ell$_i$ / *pro$_i$* guanyi ...
          Peter   not says that he / *pro* wins$_{subjunctive}$
          'Peter does not say that he will win'
      b.   *En Pere no diu PRO guanyar
          Peter   not says PRO to win

This principle also accounts for the contrast shown in (40), sentences belonging to Northwestern and Central Catalan.

(40)   a.   *Hi era el president (= 36a)   (Northwestern & CC)
          cl. was the president
      b.   Hi era ell   c.   Hi seré jo
          cl. was he   cl. will-be I
          'He was here/there'   'I will be here/there'

I have suggested that in Northwestern and Central Catalan, (40a) is ungrammatical due to the so-called Avoid Pronoun principle. However (40b) and (40c) are grammatical in these dialects. This may be the reason: because the strong pronouns *ell* 'he' and *jo* 'I' in (40) manifest nominative case, they may not appear in an impersonal sentence with *haver-hi*. Consequently, the presence of these pronouns in a postverbal position in sentences with the verb *ésser* is possible. In fact, this is the only way for a nominative pronoun to receive focus reading within a locative structure.

6. Other instances of abstract preposition incorporation

We will explore other instances of abstract preposition incorporation. In Catalan the abstract central coincidence preposition may be incorporated to verbs other than the abstract verb *be*. Some of these verbs are light transitive verbs, such as *posar* 'to put, *dir* 'to say' or *fer* 'to make, to do'. However, the incorporation of the abstract preposition is a productive strategy. It may also take place with some unergative verbs such as *dormir* 'to sleep', *estudiar* 'to study', *cantar* 'to sing', *menjar* 'to eat', etc.

6.1. Abstract preposition incorporation to transitive verbs

Let us first examine the preposition incorporation to the transitive verbs *posar* 'to put' and *dir* 'to say'. These verbs may appear in sentences that receive an impersonal reading. In these cases, the clitic pronoun *hi* is present (see Solà 1994). Other verbs syntactically and semantically similar to *posar* or *dir* —such as *col.locar* 'to place, to put', *expressar* 'to express', *afirmar* 'to claim', *confirmar* 'to confirm' etc.— may not receive an impersonal reading, because they cannot act as light verbs. Consider the sentences in (41). Similar examples can be found in Solà (1994).

(41) a. (A la portada), no hi posa els noms dels autors
                                                          (impersonal reading)
          (on the cover) not cl. puts the name of the authors
          'It doesn't say the names of the authors here'
      b. (A l'etiqueta), hi diu el preu   (impersonal reading)
          (on the label) cl. says the price
          'It says the price here'
      c. (A la portada), no hi col.loca els noms dels autors
                                                          (*impersonal reading)
          (on the cover) not cl. puts   the name of the authors
          'he/she doesn't say the names of the authors here'
      d. (A l'etiqueta), hi confirma el preu   (*impers. reading)
          (on the label)   cl. says   the price
          'He/she confirms the price here'

Sentences (41a) and (41b) may receive a personal or an impersonal reading, whereas sentences (41c) and (41d) receive only a personal reading. The verbs *posar* 'to put' and *dir* 'to say' in (41) have lost their agentive meaning because of the incorporation of a central coincidence preposition in their argument structure. Consequently, there is no place for an agent argument. In (41) these verbs act like stative verbs. Actually, sentences (41a) and (41b) may be paraphrased by the sentences in (42), where the verb *haver-hi* appears.

(42) a. (A la portada), no hi ha els noms dels   autors
          (on the cover) not cl. has the name of the authors
          'The name of the authors are not here'

b. (A l'etiqueta),   hi ha el   preu
(on the label)   cl. has the price
'The price is here'

The lexical relational structure I assign to the verb *posar* 'to put' in (41) is in (43):

(43)   a.

```
          VP
         /  \
        V    PP
      posar  / \
           XP   P'
           |   / \
          X P  DP
          hi e  el nom
                dels autors
```

b.

```
          VP
         /    \
        V      PP
      /   \   /  \
    P_i   V  XP   P'
        posar |  / \
             X P  DP
             hi t_i  el nom
                    dels autors
```
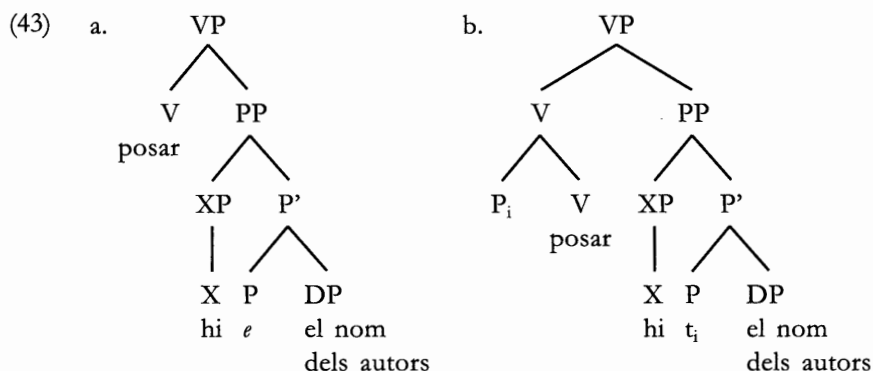
In (43) the verb *posar* acts like the abstract verb *be*. It is a verbal realization of a non-overt central coincidence preposition that is incorporated to it. Similar to *haver-hi*, *hi* raises to the Agr-person head, and the sentence receives an impersonal reading.

The verb *fer* is another Catalan light verb. In impersonal sentences like those in (44), that express atmospheric states, an abstract preposition of central coincidence has been incorporated to the verb. Consequently, the verb has lost its agentive meaning.[20]

(44)   a. (Hi) feia fred   b. (Hi) fa bon dia   c. (Hi) fa sol
          cl. made cold   cl. makes nice day   cl. makes sun
          'It was cold'   'It is a nice day'   'The sun is shining'

Before proceeding, let us return to the examples in (15), repeated in (45).

(45)   a. Hi havia el   president (=15a)   b. *L'hi   havia (=15b)
          cl. had   the president   cl._acc. cl. had
          'The president was here'

Let us now recall the problem left open in reference to these sentences. The question was: Why does (45b) not exist as an equivalent of (45a), if it was assumed that the DP in (45a) is accusative? More precisely, why is (45b) ungrammatical, if the combination "accusative clitic + locative *hi*" is possible in Catalan in contexts like those in (46)?

---

(20) In (44), the clitic *hi* is not physically present in the sentence when it has a deictic meaning; when it means the place where we are.

(46)   La Maria l'hi   ha posat, (el llibre,   a   la   lleixa)
       Mary   cl.$_{acc}$+cl. has put   (the book, on the shelf)
       'Mary has put it there'

The reason for the ungrammaticality of (45b) has to do with the clitic *hi*. In (46), the element *hi* is not in the specifier of Agr-person; this clitic *hi* does not act as a subject of an impersonal construction, whereas in (45b) it does. That a subject clitic *hi* may not coappear with an accusative clitic is shown by the sentences in (47), where the transitive *posar* 'to put' and *dir* 'to say' appear, and a clitic stands for the direct object. It is important to note that only a personal reading is possible in the sentences in (47), as opposed to the sentences in (44), which receives an impersonal reading.

(47)   a. No els   hi posa   b. No l'hi   diu
           no cl.$_{acc.}$ cl. put   no cl.$_{acc.}$ cl says
           'He does not put them there'   'He does not say it here'
           (* impersonal reading)   (* impersonal reading)

Why is the presence of an accusative clitic impossible in impersonal locative constructions? A syntactic answer following Kayne's (1994) proposal that clitics can adjoin each other before moving to the head position of a functional head for clitics or a morphological solution inspired by Bonet (1991) and by Harris (1994) could possibly explain the contrast between (45b) and (46). We would have to distinguish between two clitics *hi* with different syntactical /morphological features, where only the features of the non-subject clitic *hi* are compatible with the features of accusative clitics. We might assume that definite clitics, such as *el, la, els, les*, as opposed to nouns, have person properties in addition to case, gender and number features. On the other hand, we might assume that the subject clitic *hi* shows the [–person] property, whereas the clitic *hi* that stands for a PP is not characterized by the person property. There would be a conflict with the combination of an accusative clitic that is [+person] and a [–person] subject clitic *hi*. However, a definite accusative clitic and the clitic *hi* that stands for a PP would be grammatical because no conflict would arise, as shown in (46). Only one of the clitics would have person feature. Moreover, there is no restriction against the partitive/genitive clitic *en* and either the subject clitic *hi* or the PP clitic *hi*, because the clitic *en* manifests no person feature, as shown in (48).

(48)   (De pa)   n'hi   ha
       (of bread) cl.$_{(=of it)}$ cl. has
       'There is some bread here/there'

Another possible explanation could be based on discourse conditions. According to McNally (1992: 111), in English, "a DP is licensed in the existential if it can be used to introduced a (persistent or temporary) hearer-new discourse referent". In contrast to English, Catalan is a language which, "rather than requiring the instantiated referent in the existential to be hearer-new, requires it merely to be

discourse new" (McNally 1992: 110f). Proper names (and definite descriptions), but not pronouns, can identify a discourse new referent (see MacNally 1992: fn. 77, who follows Prince 1992). This may be the reason of the contrast in grammaticality shown in (45). The DP *el president* may identify a discourse new referent, whereas, the clitic pronoun *el* may not. Because of its anaphorical property, the accusative clitic in (45b) identifies a referent which has been previously introduced in the discourse.

Nevertheless, Catalan has two types of clitic pronouns. Definite clitic pronouns, (e.g., the definite accusative clitics *el, la, els, les*), identify a discourse referent through its referential character. Other clitic pronouns, e.g., the partitive/genitive clitic *en*, lack referential properties. The clitic *en* may relate to a noun, but not to a full DP. Consequently, this clitic may appear in locative/existential sentences, as shown in (48).

Whatever the explanation, the impossibility of pronominalizing the DP internal argument in Catalan locative sentences does not prevent us from analyzing this DP as accusative.[21]

Some mention must be made about the possibility of the presence of a definite accusative clitic in locative constructions in some Spanish dialects, a Romance language close to Catalan. The sentences in (49), which are ungrammatical in Catalan, are grammatical in some Spanish dialects.

(49)   a.   Los hay   b.   La había
            them there-is   her had
            'There are some'   'There used to be'

Interestingly, a definite DP may not appear in such constructions, as shown in (50).

(50)   a.   *Hay   los niños   b.   *Había   la   parada de autobús
            there-is the boys   there-was the stop   of bus

As the English glosses in (49) show, the definite accusative clitics in these constructions do not stand for a defined DP, but for a bare NP. Actually, the sentences in (49) may be paraphrased by the sentences in (51).

(51)   a.   Hay   niños   b.   Había parada de autobús
            there-is boys   had   stop of bus
            'There are some boys'   'There was a bus stop'

---

(21) According to Anne Zribi-Hertz (p.c.), there is a strong similarity between Catalan and (colloquial) French existential sentences. The French sentences in (i) are grammatical, but not the sentence in (ii) is not.

(i)   a.   La discussion a été très intéressante, car   il   y avait Jean   b.   Il   y   a   le doyen
           the discussion was very interesting, because expl. cl. had John   expl. cl. has the dean
           'The discussion was very interesting, because John was there'   The dean was there/here

(ii) *Il   l'   y   a
      expl. him cl. has

I thank Anne Zribi-Hertz for these examples.

These Spanish dialects use the accusative clitics in the same way that Catalan, French or Italian use the partitive clitic *en*. The accusative clitic is 'recycled' as a partitive clitic. Clitic reycling is a strategy which allows certain clitics to be used for various purposes. In Longa, Lorenzo and Rigau (1995), clitic recycling operations are conceived as a kind of last resort strategy which consists in extending the use of an element of the clitic paradigm in order to fill a gap in the paradigm.[22]

6.2. Locative inversion cases

Let us now consider the preposition incorporation to unergative verbs. Torrego (1989) has shown the significant role of a locative element in the shifting of an unergative verb into an unaccusative verb. In Spanish and Catalan some unergative verbs may act like unaccusative verbs if they have a locative subject. According to Torrego, an initial locative phrase allows a bare-NP in Spanish sentences with an unergative verb. Similarly, in Catalan, the locative clitic *hi* allows the partitive clitic *en* in sentences with an unergative verb. See Torrego examples in (52).

(52)   a.   Aquí han dormido animales   b.   * Han dormido animales
            Here have slept   animals   have slept   animals
            'Some animals have slept here'

                                                                   (Spanish) (Torrego: 1989)

       c.   N'   hi dormen molts   d.   *En   dormen molts
            cl.(=of them) cl. sleep   many   cl.(=of them) sleep   many
            'Many of them sleep there'

                                          (Catalan)

Our analysis of Catalan locative sentences provides an explanation of the examples shown by Torrego. The non-overt central coincidence preposition can be incorporated to an unergative verb. Consequently, the verb loses its agentive meaning and becomes a stative verb. On the other hand, because of the clitic *hi* acting as the subject of the preposition, the sentence is impersonal. Consider the sentences in (53).

(53)   a.   Hi parlaran   escriptors russos, en aquest col.loqui
            cl. will-speak writers   Russian in   this   colloquium
            'Some Russian writers will speak in this colloquium'

(22) Accusative clitics are used in locative constructions in some Spanish dialects (see Suñer 1982: 58-61). However in Northwestern Spanish the use of recycled accusative clitics is far more general than in Castilian, as can be observed in the contrast in (i) and (ii) from Longa, Lorenzo, and Rigau (1995).

(i)   a.   Fiebre, no la tengo (Northwestern Spanish)   (ii) a.   *Fiebre, no la tengo (Castilian Spanish)
           fever not her have   fever not her have
           'Fever, I don't have'   b.   Fiebre no tengo
      b.   Dolor, no lo siento   fever not have
           pain   not it feel   'Fever, I don't have'
           'Pain, I don't feel'   c.   *Dolor, no lo siento
                                                                     pain   not it feel
                                                              d.   Dolor, no siento
                                                                     pain   not feel
   'Pain, I don't feel'

    b. En aquesta coral, hi canten nens
         in this   choir cl. sing   boys
         'Some boys sing in this choir'

The sentences in (53) are synonymous to those in (54), which are sentences with the stative verb *haver-hi*.

    (54)   a. Hi haurà(n) escriptors russos que parlaran, en aquest col.loqui
               'There will be some Russian writers who will speak in this colloquium'
          b. Hi ha(n) nens que canten en aquesta coral
               'There are some boys who sing in this choir'

Sentence (53b) and (54b), for instance, express a property of the choir: that the choir has some boys, or that some boys belong to the choir. It is important to note that in Northwestern Catalan, the sentences in (53) do not exhibit number agreement, as shown in (55).

    (55)   a. Hi parlarà   escriptors russos, en aquest col.loqui
              cl. will-speak$_{sing.}$ writers   Russian in this   colloquium
              'Some Russian writers will speak in this colloquium'
          b. En aquesta coral, hi canta nens
              in this   choir cl. sings boys
              'Some boys sing in this choir'

The lexical relational structure of the verbs in (55) may not be different from the lexical relational structure of *haver-hi*. In (56), see the argument structure I assign to *parlar* 'speak' in sentences (53a) and (55a).[23]

(56)
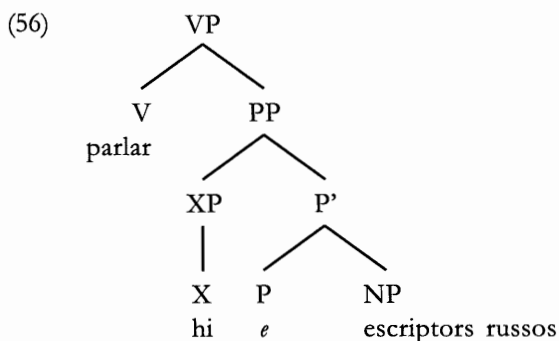
(23) Following Hale-Keyser (1993a) (see also this volume), I assume that the lexical relational structure of intransitive verbs is due to the incorporation of a noun into a light verb, as in (i).

(i)

In a second step, the verb *parlar* or *cantar* may incorporate an abstract preposition of central coincidence. If this is the case, the verb acts as the host of the real predicate, the preposition. The sentence will acquire a stative meaning.

Once the abstract preposition is incorporated to the verb *parlar*, it allows the unergative verb to license the partitive case of the NP.

If we assume the analysis in (56) for the verbs in (53) and (55), then we must accept that these verbs have to be analyzed differently when they appear in other contexts, such as (57).

(57)   a.   Tres escriptors russos parlaran en el col.loqui
            'Three Russian writers will speak in the colloquium'
       b.   Aquests nens canten en aquesta coral
            'These boys sing in this choir'

In (57) no preposition has been incorporated to the verb. Therefore, the verbs have an agentive meaning and the sentences are not impersonal. In (57) the verb needs an agent to satisfy predication. Furthermore, these sentences are not stative, they express a dynamic event.

6.3. Unaccusativity, a case of abstract preposition incorporation?

A stimulating conclusion follows from my approach. The idea is that the unaccusative verbs of motion do not form a class. There is no class of unaccusative verbs, but rather unaccusative argument structures. What we call an unaccusative verb of motion is an unergative verb to which an abstract preposition of central coincidence has been incorported.[24] I agree with Moro (1993), who argues that unaccusativity is an ephiphenomenon. But my idea is closer to Torrego's proposal, and diverges from Moro's approach in the sense that I do not accept a unique argument structure of a verb like *arribar* 'to arrive'. My hypothesis is that *arribar* is an unergative verb in (58a), but an unaccusative verb in (58b).

(58)   a.   La Maria arriba   b.   (Hi) arriben/arriba pluges
            'Mary arrives'   (cl.) arrive/arrives showers
                                          'Showers are coming'

In (58a) the verb is agentive and expresses a dynamic event, as argued by Gràcia (1989). In (58b) the verb has lost its agentive character because of the stative preposition incorporation. Its subject is an overt or a silent clitic *hi*, therefore the sentence is impersonal. Furthermore, as a consequence of the incorporation of the preposition, the verb is able to assign partitive case, an instance of the inherent case that a preposition is able to assign. In other words, the partitive case is the case that the preposition assigns when it is realized as a verb. Therefore, if preposition incorporation does not take place, the verb cannot assign partitive case. Specifically, transitive verbs only manifest accusative case, not partitive case. Consequently, the clitic *en* in (59) is the genitive case that an overt or non-overt quantifier assigns to the noun.

(59)   a.   La Maria compra llibres   c.   La Maria compra molts (de) llibres
            'Mary buys some books'   'Mary buys many (of) books'

(24) I put aside any unaccusative verbs related to an adjective. See Hale-Keyser (1993a, 1993b).

b. La Maria en$_i$ compra [Q t$_i$]	d. La Maria en$_i$ compra [molts t$_i$]
Mary cl buys	Mary cl. buys many
'Mary buys some'	'Mary buys many'

An empty quantifier would assign genitive inherent case to *llibres* 'books' in (59a) and to the clitic *en* in (53b), in the same way that the quantifier *molts* 'many' would assign genitive case in (53c) and (53d). In contrast, partitive case would be assigned by a preposition realized as a verb. But other possibilities, such as auxiliary selection or past participial constructions, will have to be considered and analyzed from this new perspective. In section 6.3.1., I sketch an analysis of auxiliary selection in line with Kayne (1993).[25]

6.3.1. Auxiliary selection

Since Perlmutter (1978) and Burzio (1986), it is well-known that in some Romance languages, the so-called unaccusative verbs select the auxiliary *be*, while transitive and unergative verbs select the auxiliary *have*. Some Catalan dialects, such as Alguerese and Rossillonese follow this pattern. In other dialects, however, *haver* 'have' is the only non-passive auxiliary.

(60)   a. La mare és venguda   b. La mare ha cantat
            The mother is come   'Mother has sung'
            'Mother has come'

<div align="right">(Alguerese)</div>

Recent research has shown that auxiliary selection depends on various factors.[26] Kayne (1993) proposes a highly modular approach of auxiliary selection, and shows that the distribution of the auxiliaries *have* and *be* depends on the structure of the sentence, on the presence of pure anaphoric clitics, and on sensitivity to tense and to person. Kayne (1993) analyzes the auxiliary *have* in parallel fashion to the main verb *have*. It is an instance of *be* to which an abstract preposition has been incorporated. My claim is that auxiliary selection may also show sensitivity to the nature of the preposition. Sensitivity to the lexical nature of the preposition will account for internal and cross-linguistic divergences. Actually, Rosen (1984), Levin

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(25) I can offer no definitive explanation for the fact that the so-called unaccusative verbs may appear in past participial constructions, whereas unergative verbs may not. Nevertheless, the answer seems to be in the verbal aspectual properties. Some unaccusative verbs may not apperar in past participial constructions (see De Miguel 1992), as shown in (i).

(i)   a. Falten forquilles / Rodolen pedres
           are lacking forks ⁄ roll stones
           Some forks are missing / Some stones are rolling
       b. *Faltades dues forquilles, vam utilitzar dues culleres / * Rodolades les pedres, vam desviar-nos
           missed two forks we used two spoons / rolled the stones we turned aside

Faltar 'be lacking' and *rodar* 'roll' are considered unaccusative verbs. However, they cannot be licensed in a past participial construction because their lexical aspect is imperfective. The grammatical aspect of past participial constructions is perfective.

(26) See Levin and Rappaport (1989), Hoekstra & Mulder (1990), Van Valin (1990), Kayne (1993), Borer (1994), Mahajan (1994), among others.

and Rappaport (1989) and Hoekstra and Mulder (1990) observed that in some languages, such as Italian, auxiliary selection is associated with a directional PP.

(61)   a. Ugo ha corso meglio ieri   b. Ugo è corso a casa
           Ugo has run better yestesday   Ugo is run home yesterday
           'Ugo ran better yesterday'   'Ugo ran home yesterday'

                                                                    (Rosen 1984)

Italian verbs that take either *have* or *be* —*correre* 'to run'; *saltare* 'to jump'; *volare* 'to fly', *fiorire* 'to bloom'— are verbs that can take a terminal (or non-central) coincidence PP as an argument. Terminal coincidence prepositions express a trajectory, which can be viewed as ending at the place, in the case of allative prepositions, or as beginning at the place, in the case of elative prepositions (see Hale 1986). Sentences (61) and (62) show that if a PP headed by a terminal coincidence preposition is present in the sentence, the auxiliary is *be*. However, when the preposition is a central-coincidence preposition, the auxiliary is *have*. The preposition in (61b) is allative (*a*, 'to'), while in (62b) it is elative (*da* 'from').

(62)   a. Ida ha saltato sul letto[27]   (Van Valin 1990)
           Ida has jumped on the bed
           'Ida jumped (up and down) on the bed'
        b. Ida è saltata dalla finestra
           Ida is jumped from the window
           'Ida jumped out of the window'

We can conclude from these example that the abstract preposition postulated by Kayne (1993) in structures with an auxiliary verb may be related to a preposition of central coincidence or to a preposition of non-central coincidence (allatives or elatives). According to Kayne (1993), the abstract preposition selects the Agr nodes that dominate the VP.

The ungrammaticality of sentence (63a) may be derived from my hypothesis. In Alguerese Catalan, the auxiliary verb *essere* is unacceptable in constructions where an unacusative argument structure appears.

(63)   a. *En aquesta casa, són venguts hòmens (Alguerese Catalan)
           in this house   are come   men
        b. En aquesta casa, hi ha vengut hòmens
           in this house   cl. has come men
           'In this house, some men have arrived'

In (63) an abstract central coincidence preposition has been incorporated to the verb *venir* 'come'. As shown in (61) and (62), the auxiliary verb *essere* appears when no central coincidence preposition is available, but when such a preposition is

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(27) The Italian preposition *su* may be used as central coincidence preposition, as in (62a) or as a terminal coincidence preposition, as in (i), an example from Levin-Rappoport (1995: 163).

(i)   Sono (*ho) salito sulla montagna
      am   have   climbed on the mountain
      'I am climbed/went up the mountain'

present in the structure, it is incorporated to the abstract auxiliary and becomes *avere*.[28] It is reasonable to argue that the preposition in the structure of auxiliaries and that of the main verb —if there is one— must be semantically compatible.[29] Sentence (63b) expresses a property of the house. It is a non-agentive sentence with a stative meaning.

7. Conclusion

The complementary distribution of the locative verbs *haver-hi* and *ésser* in Catalan is due to the overt/covert character of a central coincidence preposition, and to conditions close to the Avoid Pronoun principle. When an abstract central coincidence preposition is incorporated to a transitive or intransitive light verb, the process has an impersonalizing effect and Agr-s heads become partially or totally inactive depending on the dialect.

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(28) The Italian sentences in (i) —from Hoeskstra & Mulder (1990)— show doubtful grammaticality.

    (i) a. ??Sono arrivati turisti   b. ??Sono andati bambini
                are arrived tourists   are gone children

However, the verb *avere* is not possible in (i). In fact, in Alguerese the verb *haver* without the clitic *hi* is not able to appear in (63b). Traditional grammarians argue that Alguerese has three auxiliary verbs: *haver, ésser*, and *haver-hi*.

(29) In those languages or dialects without auxiliary selection, the abstract preposition is able to incorporate the abstract verb *be* whatever its nature.

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