

ON THE POSITION OF CENTRAL ADVERBIAL CLAUSES

Vidal Valmala

(Universidad del País Vasco/Euskal Herriko Unibertsitatea)

Abstract*

One major concern of syntactic theory has been the identification of the structural position of adjuncts in the clausal architecture with the ultimate goal of explaining their properties in a number of respects. In this paper I concentrate on the analysis of central adverbial clauses, providing evidence that when in initial position they always appear in specifier positions, either in [Spec,TopP], as proposed in Borgonovo and Valmala (2009), or in [Spec,FocP]. Concerning their sentence-final position, I explore the traditional right-adjunction approach to the position of adverbials, the adjunct-in-complement analysis argued for in Larson (1988), Stroik (1990), Kayne (1994), and the adjunct-in-specifier approach defended in Baltin (2004) and Cinque (1999, 2006), showing that Cinque's (2006) analysis is more adequate on both empirical and conceptual grounds.

1. Sentence-initial central adverbial clauses and adjunction

Haegeman (2004) distinguishes two types of adverbial clauses on the basis of their internal and external syntax. Central adverbial clauses like conditional [1a], temporal [1b], causal [1c] and purpose [1d] clauses “modify the proposition expressed in the clause with which they are related” and thus “structure the event”, whereas peripheral adverbial clauses like concessives and contrastives [2] “provide background propositions that are to be processed as the privileged discourse context for the proposition expressed in the associated clause” and thus “structure the discourse” (Haegeman p. 61). There are strong arguments which indicate that central adverbial clauses, but not peripheral adverbial clauses, are syntactically fully integrated into their associate clauses (see Haegeman 2004 and references therein).

- (1) a. John will come if Sue invites her.
- b. John came after Sue left.
- c. John came because Sue had invited him.
- d. John came so (that) he could meet Sue.

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- (2) a. John attended the party, although Sue hadn't invited him.
 b. I always attend Ann's parties, whereas John always attends Sue's parties.

Central adverbial clauses can often appear before or after the main clause, as illustrated in (3) for conditional and temporal clauses. The sentence-final position of adverbial clauses shown in (3a,c) is often considered to instantiate the 'basic' order in which the main and the embedded clause are part of the same intonation contour and there is thus no prosodic break between them. In (3b,d), on the other hand, there is a change in the intonation contour and often a pause between the adverbial and the main clause, features which are often referred to as the 'comma' intonation.

- (3) a. We'll go by car if John arrives late.
 b. If John arrives late(,) we'll go by car.
 c. We go by car when John arrives late.
 d. When John arrives late(,) we go by car.

There is general agreement that sentence-initial adverbial clauses occupy a high position in the main clause which is not c-commanded by the subject in [Spec,IP], whereas sentence-final adverbial clauses occupy a lower position which is c-commanded by the subject (Iatridou 1991, among others). One fact which has been taken as supportive of this is the asymmetry observed in the behaviour of sentence-initial [4a,c] and sentence-final [4b,d] adverbial clauses with respect to the possibility of having a referential expression in the adverbial clause coreferential with a pronominal subject in the main clause. It is thus assumed that in the ungrammatical examples below there is a principle C violation because the pronominal subject of the main clause binds the lexical subject of the embedded clause.

- (4) a. If John_i arrives late, he_i'll go by car.
 b. *He_i'll go by car if John_i arrives late.
 c. When John_i arrives late, he_i goes by car.
 d. *He_i goes by car when John_i arrives late.

As for their structural position, it has often been argued that both sentence-initial and sentence-final adverbial clauses occupy adjoined positions, in the former case left-adjoined to IP or CP, and in the latter right-adjoined to V/vP, or I'. In the case of sentence-initial *if*-clauses, for instance, the fact that they follow complementizers in embedded contexts [5a,b] and relative pronouns [5c,d] favours an IP-adjunction analysis. On the other hand, the fact that they precede *wh*-phrases in questions [5e,f] supports an analysis in terms of adjunction to CP. The lack of principle C violation effects illustrated in (4a,c) also favours a CP-adjunction analysis, as a definition of domination as in May (1985) in which a category is dominated by XP only if it is dominated by every segment of XP would result in c-command of the lexical subject of the embedded clause by the pronominal subject of the main clause if the adverbial clause were adjoined to IP.

- (5) a. I think **that** if John doesn't get enough support, he'll resign.
 b. *I think if John doesn't get enough support **that** he'll resign.
 c. John is the type of guy **who**, if you knew better, you'd get to appreciate.
 d. *John is the type of guy, if you knew better, **who** you'd get to appreciate.

- e. If John doesn't get enough support **what**'ll he do?
- f. ***What**, if John doesn't get enough support, will he do?

Concerning the issue of whether sentence-initial adverbial clauses are externally or internally merged in their surface position, a number of facts support the view that they can be both generated and moved to that position. Iatridou (1991) claims that English sentence-initial *if*-clauses are sometimes base-generated and sometimes moved to their surface position. The lack of principle C violation effects illustrated in (4a-c) supports the possibility of base-generation, as reconstruction is well known to be obligatory for principle C [6] (see Sportiche 2005, and references therein). But Iatridou proposes that the surface sentence-initial position of *if*-clauses in English can also be a derived position, as shown in the reconstruction effects observed in (7a) and (7b).

- (6) a. *Whose examination of John_i did he_i fear? (Sportiche's (18))
- b. *He_i feared Mary's examination of John_i.
- (7) a. If pictures of himself are on sale, John will be happy. (Iatridou's 1991)
- b. If his_i mother is late, every boy_i is upset.

The possibility of a sloppy identity interpretation of the pronoun in the elliptical VP in (8) noted by Haegeman (2003) also supports the possibility of a movement analysis from a VP-internal position for sentence-initial *if*-clauses. As shown in (9), the same applies to temporal clauses.

- (8) a. If his paper is accepted, John will go to the conference and so will Mary.
- b. Mary will go to the conference if John's paper is accepted.
- c. Mary will go to the conference if her paper is accepted.

(Haegeman's (19))

- (9) a. After Mary_i arrived, she_i opened the window.
- b. After his paper was accepted, John decided to attend the conference, and so did Mary. (= and Mary also decided to attend the conference when her paper was accepted)

The common feature of all adjunction-based approaches to the external syntax of sentence-initial and sentence-final adverbial clauses is that they do not provide an explanation for why left-adjunction is restricted to IP or higher projections whereas right-adjunction is restricted to I' or lower projections; if adjunction is allowed by UG and if within a language both left and right-adjunction are shown to exist, why left-adjunction to I' or VP/vP [10a,b,c] and right-adjunction to IP or CP [10d] are not possible remains a mystery.¹

- (10) a. *We if John arrives late, will go by car.
- b. *We'll if John arrives late, go by car.
- c. *We'll go if it doesn't rain, by car.
- d. *He_i will go by car if John_i arrives late.

¹ The impossible (10a-c) should not be confused with examples in which there is a pause before the *if*-clause, in which it is a parenthetical.

It is important to notice that the asymmetry observed in (5c-f) concerning the relative order of initial adverbial clauses and relative pronouns/wh-operators in questions is reminiscent of the contrast observed by Rizzi (1997) in the relative order of topics in the general case and relative pronouns/wh-operators [11].

- (11) a. the man to whom liberty, we could never grant (Baltin 1982)
 b. *the man, liberty, to whom we could never grant
 c. On the table, which dishes are you going to put?
 d. *Which dishes are, on the table, you going to put? (Culicover 1991)

The above mentioned tension —i.e. the fact that some data support adjunction to IP whereas other data favour adjunction to CP— does not arise in Borgonovo and Valmala (2009). They observe that adverbial clauses in final and initial position are interpreted as foci [12] and topics [13] respectively, and propose that the latter sit in the specifier position of a topic phrase [14] assuming Rizzi's (1997) split CP.² Within their analysis, the data in (5) receive a straightforward explanation. The complementizer *that* and relative pronouns, which sit in Force and [Spec,Force] respectively, are expected to precede adverbial clauses in [Spec,TopP]. On the other hand, wh-operators, which as Rizzi (1997) proposes I assume occupy [Spec,FinP], are correctly predicted to follow them.³ The lack of principle C effects naturally follows from the fact that the subject of the main clause does not c-command the subject of the embedded clause in Spec,TopP.⁴

- (12) A: In which circumstances will John go by train?
 B: He'll go by train if he arrives late.
 B: #If he arrives late he'll go by train.
- (13) A: What will John do if he arrives late?
 B: If he arrives late, he'll go by train.
 B: # He'll go by train if he arrives late.
- (14) [_{ForceP} [_{Force} Force [_{TopP} [_{AdverbCl}] [_{Top} Top [_{FinP} [_{Fin} Fin ...]]]]]]

Assuming Borgonovo and Valmala's analysis of topical sentence-initial adverbial clauses to be correct, in the next section I will show that adverbial clauses in sentence-initial position can also receive a focus interpretation and propose a syntactic analysis for such cases.

² Although Borgonovo and Valmala (2009) focus on the analysis of Spanish adverbial clauses, their proposal can be easily extended to English.

³ The possibility of having adverbial clauses sandwiched between two topical clitic left dislocated elements in languages like Spanish also supports the topical nature of the former:

- (i) A *Íñaki*(,) *si tengo tiempo*(,) *el informe se lo envío mañana*.
 to *Íñaki* if have-I time the report to him clitic-it send-I tomorrow
 'If I have time, I'll send *Íñaki* the report tomorrow'

⁴ This also explains the possibility of parasitic gaps in sentence-initial adverbial clauses licensed by a variable in subject position [ii] observed in Haegeman (1984a); the parasitic gap of the embedded clause located in [Spec,TopP] is not c-commanded by the trace of *which* in [Spec,IP].

- (i) This is a note which will ruin our relationship unless we send *(it) back.
 (ii) This is a note which, unless we send back, will ruin our relationship. (Haegeman's (9))

2. Sentence-initial focal adverbial clauses

Sentence-initial adverbial clauses receive a topic interpretation in contexts of neutral intonation, but in other contexts they receive a focus interpretation. This is the case of (15B2), whose information-structural properties are identical to those of (15B1), where the content of the *if*-clause is in a contrastive focus relation with the content of the *if*-clause in (15A). Similarly, in the examples in (16) the focus particle *only* has scope over the *if*-clause, which can appear in final position [16a], in initial position without subject-auxiliary inversion in the main clause [16b], and in initial position with subject-auxiliary inversion in the main clause [16c]. The same applies to temporal adverbial clauses [17,18].

- (15) A: I suppose that John will come if Mary invites him.
 B1: No, he will come IF YOU INVITE HIM (not if Mary invites him).
 B2: No, if YOU INVITE HIM he will come (not if Mary invites him).
- (16) a. The students will accept to negotiate only if the Chancellor resigns.
 b. Only if the Chancellor resigns the students will accept to negotiate.
 c. Only if the Chancellor resigns will the students accept to negotiate.
- (17) A: I think that John left after Mary arrived.
 B1: No, he left AFTER YOU ARRIVED (not after Mary arrived).
 B2: No, AFTER YOU ARRIVED he left (not after Mary arrived).
- (18) a. The students accepted to negotiate only after the Chancellor resigned.
 b. Only after the Chancellor resigned the students accepted to negotiate.
 c. Only after the Chancellor resigned did the students accept to negotiate.

As shown in (19), sentence-initial adverbial clauses can also be focal in Spanish.

- (19) (SÓLO) SI ACABAS LOS DEBERES podrás salir.
 only if finish the homework can-fut-you go out
 'Only if you finish your homework will you be able to go out'

The focal character of the sentence-initial adverbial clauses under discussion is confirmed by the fact that they are subject to the same prosodic restrictions that apply to focal elements in initial position in the general case: the impossibility of a pause between the focal element and the material to its right [20b,21b], in contrast to what is observed in topical elements [20a,21a], and the different intonation contour (Jackendoff's 1972 A vs. B accent).

- (20) a. John(,) I will meet on Friday. (topicalization)
 b. JOHN(*,) I will meet on Friday (, not Bill). (focus preposing)
- (21) a. If you really need it(,) I will lend you my car.
 b. ONLY IF YOU REALLY NEED IT(*,) I will lend you my car.

The question which emerges is what structural position focal adverbial clauses occupy when in initial position. Considering the parallelisms just considered, it is tempting to propose that they occupy the same structural position in the main clause as other focus-fronted constituents. A number of facts support this claim. The first is

that focal adverbial clauses in initial position trigger obligatory postverbal subjects in Spanish [22a,b] in the same way in which other focus fronted elements do [22c,d], which is not the case in topical sentence-initial adverbials [23]. Similarly, obligatory subject-aux inversion is triggered in English when a focal adverbial clause is introduced by a negative particle [24a,b], in clear parallelism with other focus fronted elements introduced by negative particles [24c,d]. Once again, this restriction does not apply to topical elements [25].⁵ In both languages, sentence-initial adverbial clauses can be preceded by topics [26], exactly like other focal constituents [27].

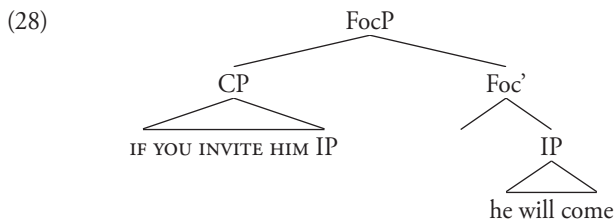
- (22) a. SI VIENES AHORA te dará Miren el certificado
if come-you now to-you give-fut Miren the certificate
'Mary will give you the certificate if you come right now'
b. *SI VIENES AHORA Miren te dará el certificado.
c. HOY ha llegado Miren tarde.
today has arrived Miren late
d. *HOY Miren ha llegado tarde.
- (23) a. Si vienes ahora, Miren te hará el certificado.
b. Hoy, Miren ha llegado tarde.
- (24) a. Not even if I was rich would I be caught in any of those, they all look like doo-doo.⁶
b. *Not even if I was rich I would be caught in any of those, they all look like doo-doo.
c. Not even in theory do differences in growth depend solely on the burden of taxation and tax wedges.
d. *Not even in theory differences in growth depend solely on the burden of taxation and tax wedges.
- (25) a. If I was rich, I would be caught in those, although they look like doo-doo.
b. Even in theory, differences in growth do not solely depend on the burden of taxation and tax wedges.
- (26) a. The certificate ONLY IF YOU COME TODAY I will give it to you. (left dis.)
b. El certificado SI VIENES HOY te lo daré. (clitic left dis.)
- (27) a. The certificate, TODAY I will give it to you.
b. El certificado HOY te lo daré.

Considering all these parallelisms in the behaviour of focal adverbial clauses and other focal constituents in initial position, I propose that the former also occupy the specifier of a focus phrase in the left periphery [28].

⁵ The same applies to fronting of complement clauses in Spanish:

- (i) a. QUE ÉL NO TIENE DINERO dice Luis
that he not has money says Luis
'Luis says that he has no money'
b. *QUE ÉL/pro NO TIENE DINERO Luis dice!

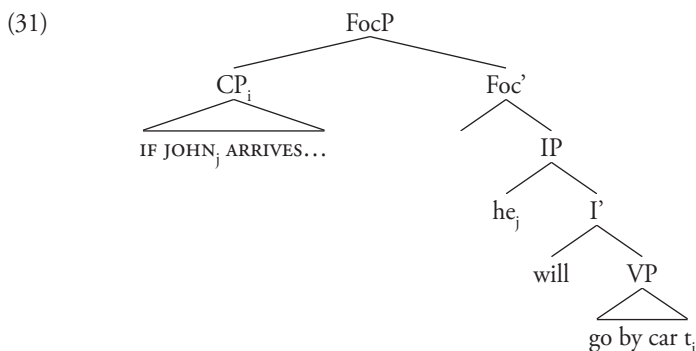
⁶ The source of this example is: <<http://www.google.co.uk/search?hl=en&q=%22not+even+if+I+was+rich+would%22&btnG=Search&meta=>>>



The second question concerning the structural position of sentence-initial focal adverbial clauses is whether they are externally or internally merged in that position, i.e. whether they are generated in or moved to [Spec,FocP]. If, like in topical sentence-initial adverbials, there are no obligatory principle C reconstruction effects when a referential expression in the adverbial is coreferential with a pronominal in the subject position of the matrix clause, the conclusion will be that the adverbial can be generated in [Spec,FocP]. In English there is variation across speakers concerning principle C effects in focal *if*-clauses [29a], whereas in Spanish most speakers have principle C effects in these contexts [29b]. The same facts apply to temporal adverbials [30c,d].

- (29) a. %ONLY IF MARY_i GETS THE JOB will she_i be happy.
 b. *(SÓLO) SI MIREN_i CONSIGUE EL TRABAJO pro_i será feliz.
- (30) a. When Joxi_i comes, he_i prepares rice with vegetables.
 b. Cuando Joxi_i viene, pro_i prepara arroz con verduras.
 c. %(ONLY) WHEN JOXI_i COMES does he_i prepare rice with vegetables.
 d. *(SÓLO) CUANDO JOXI_i VIENE pro_i prepara arroz con verduras.

These facts could be taken as evidence in favour of treating sentence-initial focal adverbial clauses as base-generated in a position in which they are c-commanded by the subject of the matrix clause, with obligatory principle C reconstruction at LF. If this is the case, the correct representation would be as in (31).



The obvious question is why focal sentence-initial adverbials cannot be merged in the specifier position of a focus phrase in the left periphery. Notice that this is part of a more general restriction also observed by other fronted constituents; there is topic left dislocation [32a], but not focus left dislocation [32b]. This is probably due

to the fact that focus is quantificational (Rizzi 1997); focal elements must thus move in order to bind a variable.

- (32) a. John, I really like him.
 b. *JOHN I really like him.

The conclusion is thus that there is no difference concerning the syntactic representation of sentence-initial adverbials and other sentence-initial constituents: topical adverbial clauses are sometimes generated in their surface position —the equivalent of left dislocation—, or moved from a post-verbal position —the equivalent of topicalization—, but focal adverbial clauses (almost always obligatorily) move from a post-verbal position —the equivalent of focus fronting—. They all sit in specifier positions.

3. The position of sentence-final adverbial clauses

Assuming our conclusion that sentence-initial adverbial clauses are not adjoined to the matrix clause, an asymmetry would result if no changes were introduced concerning the analysis of sentence-final adverbial clauses: sentence-initial adverbial clauses would occupy specifier positions whereas sentence-final adverbial clauses would occupy adjoined positions.

The obvious question is whether we want to stop here and assume that for some reason clausal adjunction is only possible to the lexical domain (v/VP), which would at least give us a neater theory although the restrictive character of adjunction should be accounted for, or whether we should also pursue a non-adjunction analysis for sentence-final adverbial clauses. In the latter case, the result would be a more conceptually desirable theory which would treat all adverbial clauses in a uniform fashion and would be compatible with antisymmetry (Kayne 1994). If they are not right-adjoined, adverbial clauses must occupy either complement positions, as proposed by Larson (1988, 1990), Stroik (1990), Kayne (1994) for adverbials in the general case, or specifier positions of some dedicated functional projections, as proposed by Cinque (1999, 2006) and Baltin (2004) for other adverbials. In the following sections I consider these issues.

3.1. The canonical order of central adverbial clauses

Let us consider the relative order of different types of central adverbial clauses —event time [33a], event cause [33b], event condition [33c], event purpose [33d]— when they appear in final position.

- (33) a. I will hide the Wii *before the children arrive*.
 b. I will hide the Wii *because the children have a lot of homework to do*.
 c. I will hide the Wii *if it is too late*.
 d. I will hide the Wii *so that the children don't get distracted*.

As shown in the examples below, with neutral intonation E.Time adverbial clauses precede E. Condition [34a,b], E. Purpose [34c,d] and E.Cause [34e,f] adverbial clauses.⁷

- (34) a. I will hide the Wii before the children arrive if they have homework to do.
 b. *I will hide the Wii if the children have homework to do before they arrive.
 c. I will hide the Wii before the children arrive so that they don't spend the whole afternoon playing.
 d. *I will hide the Wii so that the children don't spend the whole afternoon playing before they arrive.
 e. I will hide the Wii before the children arrive because they have a lot of homework to do.
 f. *I will hide the Wii because the children have a lot of homework to do before they arrive.

E.Condition clauses precede E.Cause clauses [35a,b] but can follow or precede E.Purpose clauses [35c,d].

- (35) a. I will hide the Wii if it is too late because the children have to get up early.
 b. *I will hide the Wii because the children have to get up early if it is too late.
 c. I will hide the Wii if it is too late so (that) the children can concentrate on their homework.
 d. I will hide the Wii so (that) the children concentrate on their homework if it is too late.

E.Purpose clauses always precede E.Cause clauses [36].

- (36) a. I will hide the Wii so (that) the children won't get distracted because they have a lot of homework to do.
 b. *I will hide the Wii because the children have a lot of homework to do so that they don't get distracted.

The relative order of central adverbial clauses in final position is thus as indicated in (37) illustrated in (38).

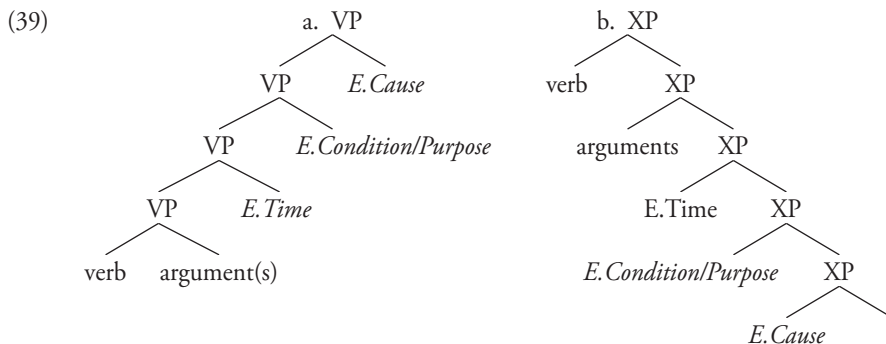
- (37) E.Time > E.Condition / E.Purpose > E.Reason
 (38) a. I will hide the Wii before the children arrive if it is too late so that they don't get distracted because they have a lot of homework to do.
 b. I will hide the Wii before the children arrive so that they don't get distracted if it is too late because they have a lot of homework to do.

3.2. Central adverbial clauses, hierarchy and Pesetsky's paradox

The effects of Pesetsky's (1995) paradox also become apparent when considering the structural position of adverbial clauses in the VP; some aspects of the behaviour

⁷ The (b) examples are good if there is a clear pause before and after the first adverbial clause, but in that case they are parentheticals.

of postverbal adverbial clauses support the ‘layered’ representation in (39a), whereas others militate in favour of the ‘cascade’ representation in (39b).



The first empirical argument in support of a ‘layered’ representation comes from VP-fronting constructions like (40) in which adverbial clauses are left stranded; under the assumption that only constituents can move, this data supports a representation in which the verb and its argument(s) are dominated by a node which excludes the adverbial clauses. The second argument which favours (39a) is the fact that combinations of adverbial clauses cannot undergo movement operations like clefting [41b] or topicalization [41c]; as they are not a constituent, movement is impossible.

(40) John said that he would hide the Wii before the children arrived, and *hide the Wii* he did *before the children arrived*.

- (41) a. Bob will hide the Wii before the children arrive if they have homework to do.
 b. *It is *before the children arrive if they have homework to do* that Bob will hide the Wii.
 c. *Before the children arrive if they have homework to do, I will hide the Wii.

The possibility of coordinating combinations of adverbial clauses, on the other hand, supports a ‘cascade’ representation where sequences of adverbial clauses are likely to form constituents [42].

(42) I will leave *before the concert starts if I am tired* and *after the party is over if I'm having a good time*.

As for the hierarchical relation between argument DPs and adverbial clauses, the possibility of a bound variable reading for pronominals inside temporal, conditional and purpose adverbial clauses bound by quantifiers in direct [43a,b] and indirect [43c,d] object positions of main clauses supports the representation in (39b) in which these adverbials are c-commanded by the theme and goal DPs.⁸

⁸ We should expect to find the opposite judgements when a pronominal occupies the position of the quantifier and an r-expression occupies the position of the pronominal, as a principle C violation would result. Although some speakers have the judgements expected, others, unexpectedly, allow for the readings in which the r-expression and the pronominal are coreferential [i]. However, all the speak-

- (43) a. They will accept every paper_i for publication *if/after* it_i is positively evaluated by two reviewers.
 b. They sent every paper_i to three reviewers *so that* it_i was evaluated according to the highest standards.
 c. They will give every female teacher_i a substantial salary increase *after/if/so (that)* she_i accepts more teaching load.
 d. They will give a substantial salary increase to every female teacher_i *after/if/so (that)* she_i accepts more teaching load.

The situation is completely different for causal clauses, as they cannot contain a pronominal bound by a quantifier in direct or indirect object position [44]. Thus, although the coordination of combinations of adverbial clauses one of whose components is a causal clause [45] is possible, if coordination is assumed not to be a reliable constituency test (see Jackendoff 1990 among others), (45) would not constitute a decisive argument in support of a 'cascade' for the representation of causal clauses, with the result that all the empirical evidence would support a layered structure for their representation, i.e. there would be no paradox. At any rate, the conclusion is that causal clauses surface in a position which is higher than that occupied by the direct and indirect object but lower than the subject position, as they can contain a pronominal bound by the matrix subject [46a] but not a referential expression coreferential with the matrix subject [46b].

- (44) a. *They accepted every paper_i for publication *because* it_i had been positively evaluated by two reviewers.
 b. *They gave every female teacher_i a substantial salary increase *because* she_i had accepted more teaching load.
 c. *They gave a substantial salary increase to every female teacher_i *because* she_i had accepted more teaching load.
- (45) Susan left *after John arrived because she wanted to greet him*, and/*but before Tom came because she didn't want to meet him*.
- (46) a. Every female teacher_i has been hired *because* she_i is intelligent.
 b. *She_i has been hired *because* Mary_i is intelligent.

Thus, the syntactic representation of the postverbal adverbial clauses under discussion should have the following properties:

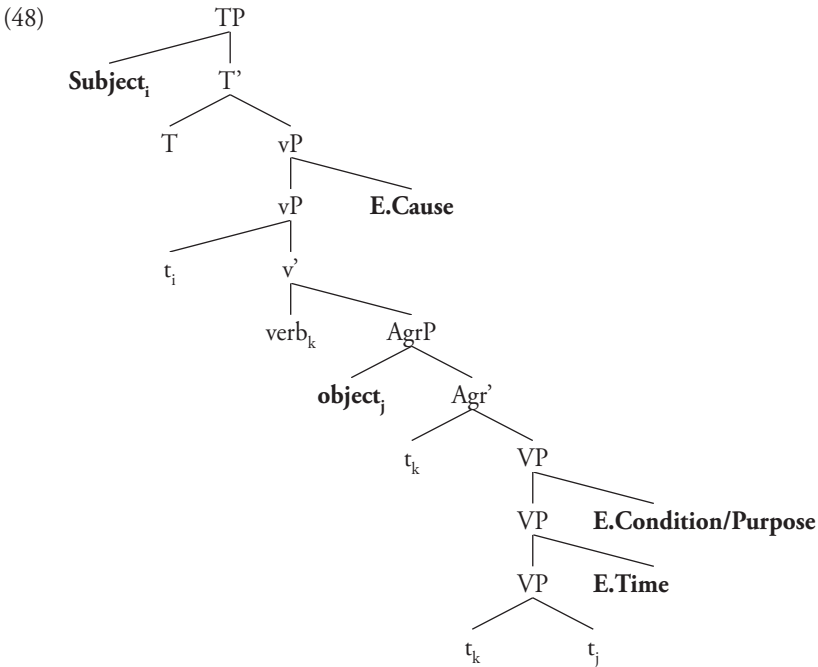
- (47) a. Combinations of adverbial clauses do not form a constituent.
 b. The subject of the matrix clause c-commands all types of adverbial clauses.
 c. The internal argument(s) c-commands E.Time, E.Condition and E.purpose adverbial clauses, but not E.Cause adverbial clauses.

ers agree concerning the contrasts in the bound-variable data, which is why those are used to illustrate Pesetsky's paradox effects in the text. Obviously, the unexpected judgements below, also a paradox, deserve an explanation.

- (i) a. √/*They will hire her_i *if/after* Mary_i accepts their conditions.
 b. √/*They hired her_i *so that* Mary_i would not sell her formula to any other company.
 c. √/*They will give her_i a salary increase *if/so that/after* Mary_i accepts more teaching load.
 d. √/*They will give a salary increase to her_i *if/so that* Mary_i accepts more teaching load.

3.3. Right-adjunction

Within a right-adjunction approach to the position of adverbial clauses, the representation in (48) would incorporate the necessary ingredients. The crucial assumption in order to capture the binding facts is that, as proposed in Johnson (1991), the verb and the object move overtly outside the VP to check features, so that the object c-commands E.Time, E.Condition and E.Purpose adverbial clauses, which would be adjoined to the inner VP.⁹ If E.Cause clauses, which are the most peripheral ones in linear order, can be argued to be adjoined to a higher projection of the VP-shell —vP in our representation— they will only be c-commanded by the subject, thus explaining the impossibility of (44).



The fact that, as shown in (49), Heavy NP-shifted objects can follow E.Time, E.Condition and E.Purpose but not E.Cause clauses would constitute an additional argument in support of a representation like (48) in which the former and the latter are adjoined to different projections.

- (49) a. I will buy if Mary finally comes for dinner a couple of bottles of that wine she likes so much.
- b. I bought after Mary had left a couple of bottles of that wine she likes so much.

⁹ It is not crucial for present purposes that there be an Agr head; the same results are obtained if the object moves to [Spec,VP] to check case.

- c. I bought so (that) Mary would enjoy the party a couple of bottles of that wine he likes so much.
- d. ??I bought because Mary was attending the party a couple of bottles of that wine she likes so much.

One potential empirical problem for the representation in (48) is that the verb and the object do not form a constituent, which is not compatible with the VP-fronting facts considered in (40). Baltin (2005), however, has convincingly shown that the verb and the object of fronted VPs do not constitute a unit and that the phenomenon is the result of a series of independent movement operations.

Additionally, a problem for any adjunction-based approach to sentence-final central adverbial clauses is that unlike other adjunct clauses they do not seem to be able to be inserted post-cyclically. As shown in (50), principle C effects arise when the pronominal subject of a matrix clause is coreferential with a referential expression inside an adverbial clause modifying a clause which has been fronted as part of a complex NP, which means that the adverbial clause undergoes obligatory reconstruction to its original position at LF.

- (50) a. *Whose claim that John committed suicide because Mary_i had abandoned him is she_i willing to refute?
- b. *Whose claim that John committed suicide after Mary_i abandoned him is she_i willing to refute?
- c. *Whose claim that John will succeed if Mary_i helps him is she_i willing to spread?
- d. *Whose claim that John left so (that) Mary_i wouldn't see him is she_i willing to discuss?

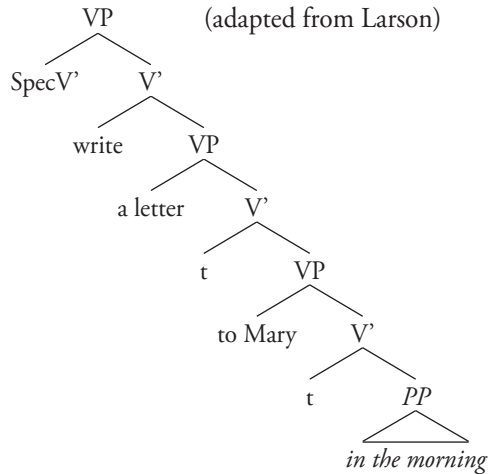
On the other hand, as we have concluded that sentence-initial central adverbial clauses are in specifier positions, an adjunction-based representation is less desirable than one in which they are merged as specifiers (or complements) when they appear in final position. Such an approach would also be compatible with antisymmetry, the more restrictive theory of structure-building proposed in Kayne (1994).

3.4. Adjuncts as complements

Larson (1988), Stroik (1990) and Kayne (1994) propose that adverbial PPs are merged in complement positions, as shown in (51b) for the VP of (51a). This type of 'cascade' representation is compatible with antisymmetry but is not compatible with one important aspect of the representation of adverbial clauses. Remember that the data in [44] indicates that causal adverbial clauses are not *c*-commanded by the direct and indirect object. In a representation in which adjuncts are in complement position, the causal adverbial clause of (52) would occupy the (complement) position occupied by the PP *in the morning* in (51). But then the adverbial causal clause would be *c*-commanded by the direct and indirect object, wrongly predicting the grammaticality of (44).

(51) a. John will write a letter to Mary in the morning.

b. (adapted from Larson)



(52) John will write a letter to Mary *because he loves her*.

3.5. Adjuncts in specifiers

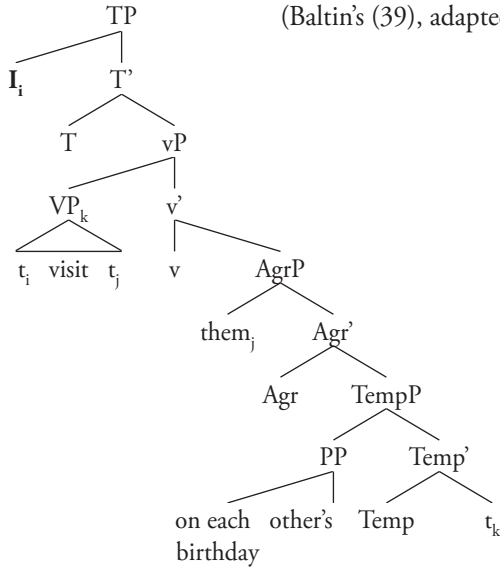
There have been two attempts to provide representations for adverbials in the general case in which, following Cinque (1999), they occupy specifier positions.

3.5.1. Baltin (2004)

Baltin (2004) proposes an explanation of the properties of postverbal PPs on the basis of three premises. The first, following Cinque (1999), is that adverbials are generated in the specifier position of designated functional projections above the verb phrase, the second, following Johnson (1991), is that the object undergoes overt movement to a specifier position, and the third is that the VP, which after all the arguments have moved only contains the verb, undergoes remnant movement to a specifier position which is higher than the landing site of the object. In this context, the representation of (53a) is that of (53b).

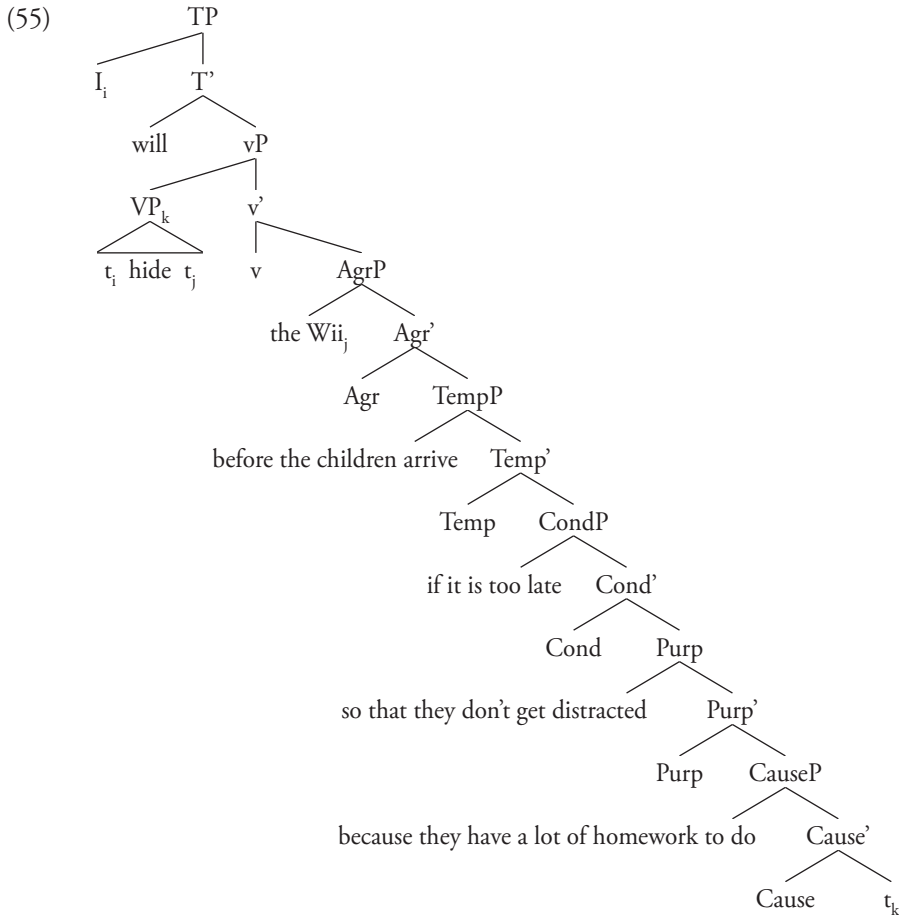
(53) a. I visited the students on each other's birthdays.

b. (Baltin's (39), adapted)



If we assumed this type of solution for the representation of central adverbial clauses, they could be argued to occupy the specifier positions of the relevant (functional) heads —temporal, condition, purpose and cause— located between Agr and the VP. But there is a conceptual problem for this representation; as linear order reflects asymmetric c-command in (53), if we adopted this type of representation for (38a), repeated below as (54) for convenience, we would obtain (55), where the hierarchical relation between the different types of phrases in the VP would be the mirror image of the surface order; E. Time is the most 'external' and thus the furthest from the event that it modifies, and E.Cause would be the projection immediately dominating the core of the event. This clearly cannot be the right approach, as the scope relations between the different heads in this representation would result in an interpretation in which Temp, and thus the temporal clause in its specifier position, provides temporal specification for the cause of an event, which is not the case. On the other hand, as in the adjunct-as-complement approach, we wrongly predict the possibility of a bound pronoun in the causal clause bound by the direct or the indirect object.

(54) I will hide the Wii before the children arrive if it is too late so that they don't get distracted because they have a lot of homework to do.



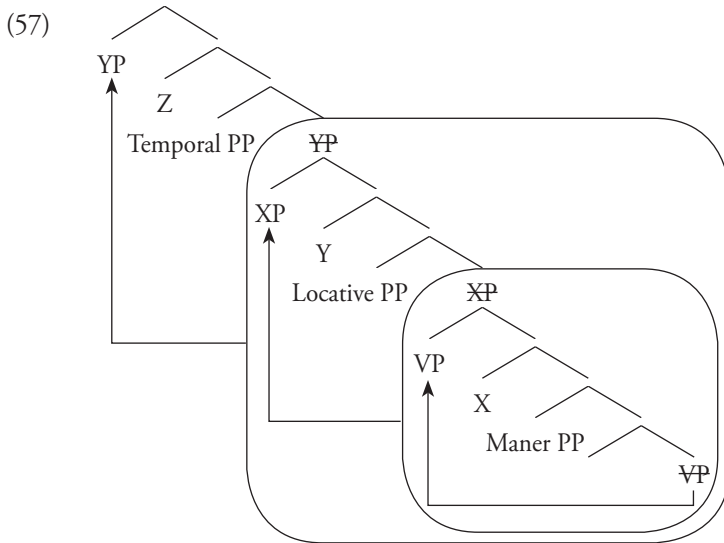
I thus conclude that both binding facts and the scope relations between the different types of adverbial clauses militate in favour of a representation in which E.Cause is the most external adverbial clause, with E.Condition/E.Purpose in an intermediate position and E.Time immediately dominating the VP, which is what we had in the adjunction approach. The problem is that if we simply reverse the hierarchy of heads in (55), after the verb and the object move out of the VP we obtain the wrong surface order: verb + object + E.Cause + E.Condition/E.Purpose + E.Time.

3.5.2. Cinque (2006)

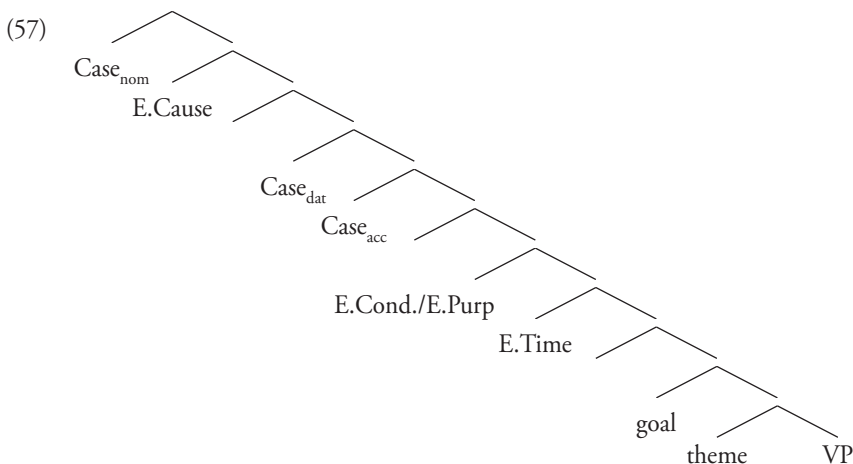
On the basis of crosslinguistic evidence, Cinque (2006) proposes that, although in many OV languages like English the canonical order of non-argument PPs is Manner > Locative > Temporal [56], the universal order of merge for these types of PPs is as in (57), i.e. it is the mirror image of their surface order in English-type languages. In his analyses, their surface order in these languages is the consequence of the fact that the VP moves to specifier positions pied-piping the projection immedi-

ately dominating the specifier position from which it is moving, as shown in (57), a derivation compatible with antisymmetry.

(56) John cleaned the lamps *with ammonia in the backyard on Thursday*.



Notice that Cinque’s analysis features the crucial property needed for the representation of adverbial clauses; it gives us the possibility of locating them in the correct hierarchical relation. Although merged in order E.Cause > E.Purpose/E.Condition > E.Time, pied-piping triggered by movement of the VP reverses their order. In this context, the simplified representation of postverbal adverbial clauses would thus be as in (58).



E.Condition, E.Purpose and E.Time adverbial clauses are merged below the positions to which the theme and goal arguments move to check Case, so that at some

point in the derivation these adverbial clauses are bound by the direct and indirect object, which explains the data in (43).¹⁰ E.Cause clauses, on the other hand, are merged above dative and accusative Case checking positions, so that at no point in the derivation are they bound by these arguments, which explains the data in (44). The sentence-final position of E.Cause clauses is the result of the last pied-piping operation triggered by movement of the VP to a position past it. All adverbial clauses can contain a pronoun bound by a quantifier in subject position because they are all c-commanded by the subject in its nominative Case checking position. Movement of combinations of adverbial clauses is correctly predicted to be impossible, as they do not for a constituent. The resulting representation thus features all the properties considered in (47).

4. Conclusion

This paper is a first approximation to the external syntax of central adverbial clauses. I have shown that sentence-initial adverbial clauses always occupy specifier positions of discourse-related functional projections. As for sentence-final adverbial clauses, I have shown that there is a canonical linear order of different types of adverbial clauses—event time > event condition/event purpose > event cause—which is the mirror image of the order in which they are merged in the clausal architecture—event cause > event condition/purpose > event time—. I have concluded that temporal, conditional and purpose clauses are merged below the Case checking positions of the goal and theme arguments, whereas causal clauses are merged above those positions. After considering several alternatives to the representation of sentence-final adverbial clauses, I have concluded that the mechanisms developed in Cinque (2006) to explain the syntax of adverbial PPs can also be utilized when providing a representation of adverbial clauses compatible with antisymmetry.

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¹⁰ Like in Cinque's (2006) analysis of the binding relations between the DPs contained in adverbial PPs, the binding properties considered here are a function of reconstruction.

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