

DOCUMENTING THE INVISIBLE: HOW DATA ACTIVISM FILLS VISUAL GAPS

Documentar lo invisible: cómo el activismo de datos llena los vacíos visuales

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ABSTRACT: This article examines, from the perspective of data activism, how some organizations are developing new languages to talk about invisibility, disappearance, and liminality. To do this, it uses open source intelligence (known as OSINT), maps, and public and citizen data. Examining four pioneering projects which incorporate these practices (Forensic Architecture, Bellingcat, Syrian Archive, and the work of activist María Salguero), the article discusses how technologies such as OSINT and maps can serve to chart the previously unmapped and, by doing so, shed light on the agency and destinies of invisible people. Facing traditional ways of talking about abuse and suffering in documentaries, this type of data activism offers counter-narratives that renew the visual language to deal with human rights abuses. By embracing OSINT and maps to visualize disappearance, data activism has gained the precision of digital tools and has influenced investigative and journalistic practices. This analysis also suggests that OSINT and digital cartography could be part of a renewal in documentary production.

RESUMEN: Este artículo examina, desde la perspectiva del activismo de datos, cómo algunas organizaciones están desarrollando nuevos lenguajes para hablar sobre la invisibilización, la desaparición y la liminalidad. Para ello, estas emplean la inteligencia de fuentes abiertas (conocida como Open Source Intelligence [OSINT, por sus siglas en inglés]), los mapas y los datos públicos y ciudadanos. Al examinar cuatro proyectos pioneros en la incorporación de estas prácticas (Forensic Architecture, Bellingcat, Syrian Archive y el trabajo de la activista María Salguero), el artículo plantea cómo tecnologías como la OSINT y los mapas pueden servir para mapear lo antes no cartografiado y, de esta forma, arrojar luz sobre la agencia y los destinos de personas invisibilizadas. Frente a las formas tradicionales de hablar sobre los abusos y el sufrimiento en los documentales, este tipo de activismo de datos ofrece contra-narrativas que renuevan el lenguaje visual para tratar sobre abusos de derechos humanos. Al adoptar OSINT y mapas para visualizar la desaparición, el activismo de datos ha adquirido la precisión de las herramientas digitales y ha influido en las prácticas periodísticas y de investigación. Este análisis también sugiere que OSINT y la cartografía digital podrían ser parte de una renovación en la producción documental.

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1. MAPPING THE UNMAPPED¹

In 2016, after several days of tension, violence escalated at the border between Turkey and Greece. Shooting in the Evros/Meriç region resulted in the death of Syrian citizen Muhammad al-Arab. An investigation by Forensic Architecture [FA] (2020) shows the shoots came from the Greek side of the border, but Greek authorities denounced these claims as *fake news* (Gandt, 2018) (see Figure 1). Following a European Union [EU]-Turkey agreement, Turkey had initially restrained migrants trying to reach Greece; however, the Turkish government encouraged thousands of them to cross into Greece to pressure the EU to comply with Turkish interests in Syria (Forensic Architecture, 2020). The Greek government responded by deploying its forces to the region. The death of al-Arab occurred under those circumstances.



Source: Forensic Architecture (2020).

Figure 1

Film still, *The Killing of Muhammad al Arab*

Forensic Architecture [FA] —a research agency based at Goldsmiths, University of London— uses public digital data, testimonies, and official documents to investigate cases of human rights abuses and killings. Namely, it employs digital content made available by satellite data providers, governments, and people on sharing platforms and combines those with information from the traditional sources used by human rights organisations. The combination of these different types of data produces accounts that FA communicates in documentaries that display maps, images (taken while incidents were happening), and animation. Thus, FA’s investigations offer detailed versions of what Butler and Athanasiou (2013) call the dispossessed, and Gatti (2020) names as the «bad life»: cases of disappearance, exclusion, and death.

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This analysis is focused on how data activist organisations, such as FA, represent *the non-apparent*—people, places, and processes that do not usually come into view— including migration and some of its causes. Data activism is a social practice enabled by the data infrastructure for protest, advocacy, and mobilisation. The data infrastructure refers to the processes, software, and hardware that are essential to transforming data into information. This study examines four projects that visualise the invisible, in order to contribute to understand how activism engages with human disasters. It is based on previous explorations of data activist contributions to films, activism, and cartography (Gutierrez, 2021; 2020; 2018a).

The article is structured as follows: First, a methodological section offers the case selection criteria and methods. Next, in section 3, the concepts of the invisible, the disappeared, and the liminal are explored in connection with missing data and the possibility of their visualisation. The fourth section reviews the tradition of using the visual language of documentaries to make human rights claims. In sections 5 and 6, two practices—open-source intelligence (OSINT) and digital cartography—are employed as perspectives to structure the analysis of four projects. Ideas from the reviews presented along sections 3 and 4 enrich the discussion and conclusions which follow. All images are published with permission from the authors/sources; the author did all the translations.

2. METHOD

This article proposes OSINT as a procedure on its own right to process and map data to represent cases of disappearance. OSINT is a technique that collects data from public sources, and by recycling and repurposing them, configures different layers in cartography. Thus, the main question addressed here is how OSINT and data visualization procedures conform cartographies of the disappearance in data activism.

This question is tackled in a comparative analysis of data practices based on a multiple case study method. This study focuses on four projects carried out by four organisations in action (Table 1 shows the selection of the projects) and comprises analyses of practices in real-life contexts. The case study methodology is helpful when the boundaries between a phenomenon and its context are not evident (Yin, 2002), as is the circumstance here. This study is exploratory, and shows data activism from proximity (Woodside, 2010: 322).

The projects were selected based on their representativeness, as they can be considered pioneering experiences contributing «to our understanding of changes» in activism (Hepp, 2016: 918). Pioneering communities act as intermediaries between the development and the appropriation of technologies (Hepp, 2016). They represent the *avant-garde* of data activism, for they pioneer the exploitation of the data infrastructure and new employments of the visual language to serve as catalysts for social action. Their technology «creates a horizon of possibility» for others (Hepp, 2016: 919). Besides, the four projects employ both OSINT and digital cartography fed by public or crowdsourced citizen data to make visual claims on behalf of the disappeared.

OSINT takes advantage of public data. Of the five ways activists gather data (i.e., via whistleblowers, from public/published repositories and platforms, crowdsourcing platforms, scraping web data, or generating them through sensors, drones, and other methods)

(Gutiérrez, 2018a), this is the second simplest data gathering method, which does not mean they are easy to analyse or visualise. The term *open* refers here to publicly available sources, whether paid or free, displayed in a user-friendly format or not (e.g., videos uploaded on YouTube by people). Thus, OSINT can be based on documents, traditional media, digital photographs, videos, images, audio, and their metadata, including geospatial information, which are publicly accessible. It is used in many fields, including crime investigation, security analysis, or marketing. However, some of the most exciting OSINT applications come from data activist organisations.

Table 1
Cases included in this study

Project, date, place	Promoter	Actors	URL
<i>The Killing of Muhammad al-Arab</i> (2020), Evros/Meriç River delta, Greece and Turkey	Forensic Architecture, supported by Open Society Foundation (OSF) & HumanRights360	Muhammad al-Arab (Syrian national); governments of Greece and Turkey, Parliamentary Inquiry in Greece	https://forensic-architecture.org/investigation/the-killing-of-muhammad-al-arab
<i>Manpreet came from India to fall in Veracruz, Mexico [Manpreet vino de la India para caer en Veracruz, México]</i> (2020), Veracruz, Mexico	Bellingcat as part of the Migrants from Another World (« <i>Migrantes de Otro Mundo</i> ») ²	Manpreet Singh (Indian national); Mexican authorities: Acayucán Migration Station; a hospital in Veracruz	https://www.youtube.com/watch?v=FdFhzCePGRQ
<i>Strike on the Martyr Abdo Salama School in Sarmin</i> (2020), Sarmin, Syria	Syrian Archive	9 Syrians (5 children) killed; the Syrian government or a government-affiliated militia may be responsible for the incident	https://syrianarchive.org/en/investigations/sarminschool
<i>Femicides in Mexico [Los feminicidios en México]</i> (2019), Mexico	María Salguero	Thousands of assassinated women	https://femicidiosmx.crowdmap.com/

Source: Elaborated by the author.

² Migrants from another world («*Migrantes de Otro Mundo*») is a bigger project supported by the Centro Latinoamericano de Investigación Periodística [CLIP], Occrp, Animal Político (México); Chiapas Paralelo; Voz Alternativa de la Red Periodistas de a Pie (Mexico); Univision Noticias (Estados Unidos), Revista Factum (El Salvador); La Voz de Guanacaste (Costa Rica); Profissão Réporter de TV Globo (Brasil); La Prensa (Panamá); Semana (Colombia); El Universo (Ecuador); Efecto Cocuyo (Venezuela); y Anfibia/Cosecha Roja (Argentina), Bellingcat (Reino Unido), The Confluence Media (India), Record Nepal (Nepal), The Museba Project (Camerún). Funders include: Avina Foundation and the Seattle International Foundation.

Digital cartography refers to both the capabilities of the geospatial web or geoweb—that combines geographic, geospatial, and geotag overlay systems (Scharl and Tochtermann 2007)—, mixed with the crowdsourcing platforms' capability of collecting and visualizing citizen and public data, mobile technologies, and other infrastructures, such as remote sensing systems; all of which have expanded people's cartographic power. Crowdsourcing is the third method of the five ways activists gather data (Gutierrez, 2018a). It implies the summoning of a *crowd* or community of citizen data reporters willing to collaborate in the effort.

In the next section, relevant concepts related to exploring (in)visibility and forms of representation are reviewed to enrich the subsequent analysis. Afterwards, the analysis focuses on how OSINT and digital maps are employed. Since these two practices do not appear homogeneously in all cases, as activists use them when they find them useful, the analysis tackles them only when relevant.

3. INVISIBLE, LIMINAL, DISAPPEARED

To talk about the representation of the uncharted, it seems necessary to distinguish between the terms *invisible*, *liminal*, and *disappeared*. Although these are related concepts, they pose different challenges to data gathering and representation.

Some people are invisible to the data infrastructure; thus, they are not represented. Their existence is not captured by satellites or censuses; they do not inhabit smart cities, hold bank accounts, own passports, pay utility bills, or possess mobile phones. These are the cases of homeless people, or those living in poverty pockets in peri-urban areas, or rural people living in fragile states who leave behind few traces. Their *digital invisibility* makes them a challenge for development and humanitarian agencies. Data aggregation can also lead to this invisibility (Mehrabi *et al.*, 2019). For example, in Romania, the number of Roma people (up to one million) is underestimated, resulting in a lack of policies to promote equality (Niklas and Gangadharan, 2018). Data aggregation biases also typically work against women and minorities; this happens when groups' algorithmic conclusions are drawn from datasets that aggregate information about general populations (Mehrabi *et al.*, 2019). Women have less access to digital technology (Taylor, 2018); therefore, they are less detectable by the data infrastructure.

The *forced disappeared* usually experience a liminoid incident (e.g., detection). Although the term is disputed, victims of disappearance generally «go missing» when someone representing the state or non-state actors grab them «from the street or their homes and then deny it or refuse to say where they are» (Amnesty International, 2021a: par. 1). They are often never released, and their fate remains unknown; they are usually presumed dead.

Gatti argues for adopting a new category, *the social disappeared*, that includes «radically excluded individuals» (2020: 37-38), and proposes an interception of these concepts. For instance, invisibilised women can go *missing* while migrating. During the crossing of the Mediterranean, women are placed below deck or in the middle of boats, which makes escape difficult; they are also weaker swimmers, wear heavier clothing, and travel with children (Migration Data Portal, 2020). Even though women comprise a small share of the deaths in the Mediterranean, the proportion of women who drown is larger than that of men (Migration

Data Portal, 2020; UN Migration, 2018). Globally, female migrants are at high risk of sexual abuse on their journeys and are left without health assistance if they become pregnant (Migration Data Portal, 2020). Despite this, the threats women face during their journeys remain largely invisible within the available data.

In anthropology, liminality is a concept that refers to the ambiguity that occurs in the middle stage of a rite of passage, when participants no longer retain their pre-ritual status but have not yet acquired a new one (Turner, 1974). During a rite's liminal stage, participants stand at the threshold between their previous connection to identity and community and a new connection (Turner, 1974 and 1969). Nevertheless, the usage of this concept has broadened to describe political, social, and cultural change (Horvath, Thomassen and Wydra, 2018), and has been expanded to include liminoid experiences relevant to a post-industrial society, such as migration and war (e.g., Genova and Zontini, 2020; Moyo, 2019). The dissolution of *normal* order during liminality creates an unstable situation that fosters misfortune. During liminality, citizenship —granting rights to citizens— may be suspended; people become dispossessed due to the loss of their land, citizenship, property, and a broader belonging to the world (Butler and Athanasiou, 2013). Examples include women trapped in trafficking networks who see their passports seized and their rights withdrawn (Office of the United Nations High Commissioner for Human Rights, 2014). Nonetheless, migrants also inhabit those liminal spaces by building networks, by embracing adaption strategies, and by organising their lives (Agier, 2008). Liminal situations are thus occupied, resisted, and even questioned by the migrants themselves. Also, liminal places can be (re)borderised when represented (Cuttitta, 2014); e.g., the construction of migrants as irregulars has transformed the island of Lampedusa into a representation of a frontier separating the wanted from the unwanted (Cuttitta, 2014). In sum, whereas *invisible* and *disappeared* refer to people who may remain un-datatified or to those who suddenly vanish from the data-based panopticon —using DeLanda's idea of an encompassing «intelligence-acquisition machine» (1991: 203)—, *liminal* refers to experiences that change people's statuses.

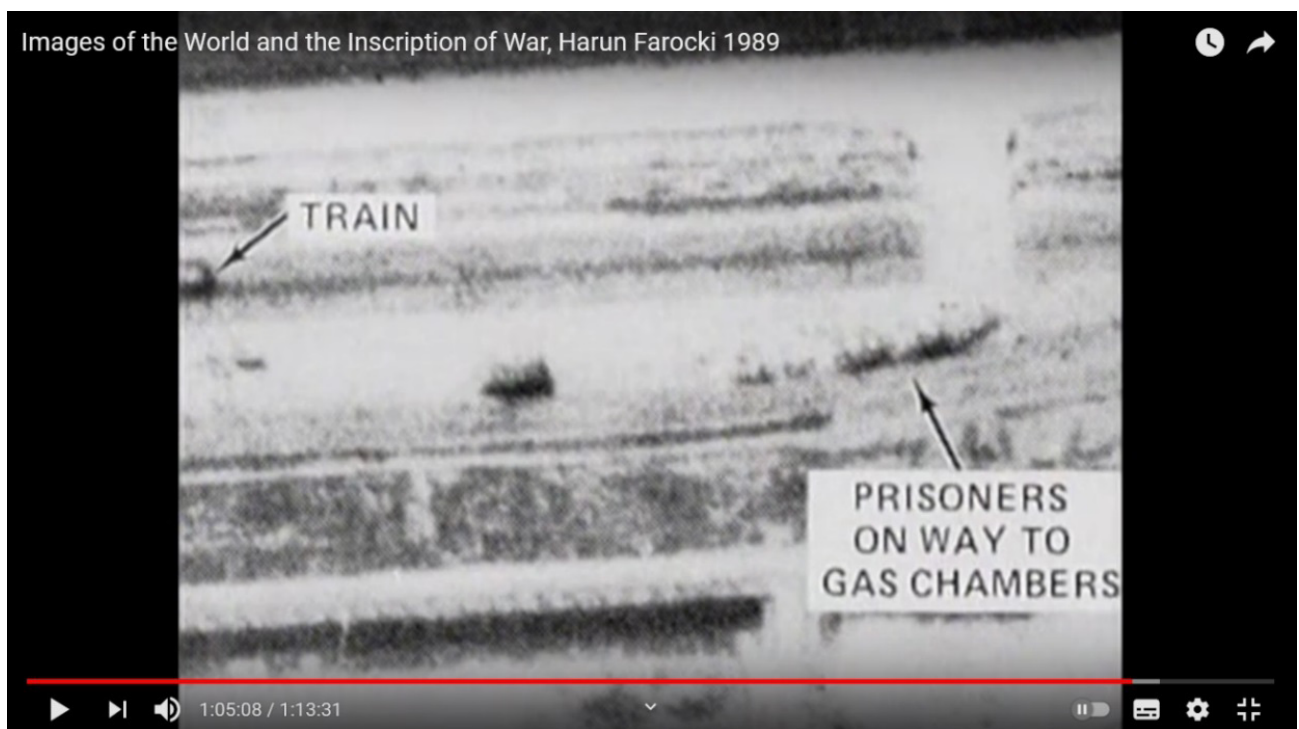
Data activism strives to map the invisibilised, the disappeared, and the liminal by turning the intelligence-acquisition machine around. But these visibility/invisibility regimes can embed —and conceal— asymmetries too; for example, in how data activism engages actors. However, data activist initiatives are interesting to explore how formerly invisible data can be visualized. One example is the Ushahidi deployment of the Haiti earthquake in 2010. Although it was not its primary objective, this deployment of the earthquake plotted parts of the country that had remained uncharted thus far (Meier, 2012). Ushahidi is an open-source platform that uses user-generated data to map disasters and crises in real-time. As the «Missing Maps» website —a data activist initiative— states, the most crisis-prone parts of the world are the ones that need mapping. The slum, the catastrophe, and the frontier are all liminoid spaces; but when mapped, paraphrasing Bazan (2020), invisibilized and disappeared people are made visible. These are the categories that are employed below to analyse the cases.

4. VISUAL LANGUAGE AND HUMAN RIGHTS DEMANDS

While there is a long tradition of representing the invisible to make claims on human rights through documentary, the projects examined below pose human rights demands using visual

language. It remains to be seen whether data activism generates its own genre of visibility, different from documentaries. Nonetheless, OSINT and maps are deployed not as a typical form of documentation for any documentary, but as a form of recycling and repurposing, closer to a reorganisation of attention. However, studying the role of documentaries in these matters can offer insights into data activism.

After the Holocaust, a new trend emerged: films had to cope with the lack of images (Pena, 2020). Few visual documents remained compared to the dimension of the human tragedy. Long camera movements and desert landscapes compensated for the lack of images and generated a cinema of absence (Pena, 2020). The polemic around the representation of human slaughter would culminate with *Shoah* (Lanzmann, 1985), although subsequently, essay-films started to deal with the issue of visual representation and memory more often (e.g., Marker, 1983). In the same vein, in the documentary film *Bilder der Welt und Inschrift des Krieges*³, Farocki (1989) examines aerial reconnaissance photos of the Auschwitz-Birkenau concentration camp (see Figure 2).



Source: Farocki (1989).

Figure 2

Film still, *Bilder der Welt und Inschrift des Krieges*⁴

Some images from the camps had survived the Nazi regime's attempt to suppress them. In *On Photography*, Sontag (2005: 14) spoke about her experience of a «negative epiphany» when happening upon photographs of the Bergen-Belsen concentration camp. Ten years later, *German Concentration Camps Factual Survey* (Bernstein, Berstein and Hitchcock, 2014),

³ Images of the world and the inscription of war.

⁴ Available at: <https://www.youtube.com/watch?v=wjO18TV8GkU> Last access: 18/12/2020

a British documentary film based on footage shot by the Allied forces in 1945, was shown for the first time in the United States. This documentary uses long camera movements almost forensically to show what the British troops encountered when they arrived at Bergen-Belsen. Other documentaries resorted to interviews and animation to fill visual gaps. For instance, in *The Act of Killing*, director Oppenheimer (2012) encourages massacre perpetrators in Indonesia to re-enact their crimes for the camera. And the film *L'Image manquante*⁵ employs stop motion animation, handcrafted figurines in clay, and archival footage to talk about the Khmer Rouge (Panh, 2013).

Lately, scholars have been re-thinking the connection between visual language and human rights demands in documentaries. Pena (2020) lists the edited volume *Beautiful Suffering* (Reinhardt, Edwards and Duganne, 2007), *The Cruel Radiance* (Linfield, 2010), and *Civil Imagination* (Azoulay 2015) as explorations that have moved beyond the concerns about image fatigue that informed Sontag's writing. Instead, they argue for the possibility of photographic meanings, calling upon photography's aura to make claims (Pena, 2020). Thus, the notion of *event* is central to this line of work: a disaster, atrocity, genocide, acts of war, or forced displacement must be registered as an image and shown to spectators to demonstrate the violation of rights and incite intervention (Pena, 2020).

With the emergence of digital platforms and mobile phones, user-generated digital images have put pressure on the definition of the *event*. Today, it is not the spectators' apathy that causes concern but their narrow attention span. For instance, Stiegler (2012) argues that the arrival of platforms creates a globalised public space in which atrocity images circulate with ease. For human rights claims to be seen within this flow of imagery, spectators must pay attention and assign significance to events. The other side of the attention challenge is the algorithmic bias. The platforms' algorithms categorise, label, and present information; and therefore, algorithmic biases derive from the ability of search engines to prioritise information depending, for example, on where it appears (Mehrabi *et al.*, 2019). Platform mediation grants support, credibility, and ranking; and since its algorithms offer individuals only what they like, this encapsulates them in ideological bubbles (Pariser, 2011). Thus, many people's suffering remains uncharted. From the human rights emergency in Burundi to the electoral bloodbath in the Central African Republic in 2020, dozens of under-reported crises do not attract the world's attention (CARE, 2021). Western news media organisations often miss or avoid covering these catastrophes, since they are not telegenic, happen in «far-away places» to non-Westerners in countries of little geopolitical consequence, and are arduous to explain (Greenberg and Scanlon, 2016; Moeller, 2006).

The question of the representation of the invisible and of the event is a central element of the projects studied here. The emergence of digital platforms (as data sinks, promotion tools, and attention magnets), the dispersion of awareness, the biases introduced by the platforms' algorithms, and the telegeny of the catastrophes redefine the event. On the other hand, sharing platforms allow people (including witnesses, victims, and perpetrators) to disseminate user-generated digital images and activists to stitch alternative stories together as well.

The projects analyzed here recycle and repurpose those data via OSINT methods to reconfigure visibility. Thus, concepts like «social disappearance» (when referring to non-telegenic catastrophes happening to neglected people), «intelligence-acquisition machines,»

⁵ The Missing Image.

and, especially, what the invisible, disappeared, and liminoid mean (when the image captures are oblique) acquire new significance. This article precisely posits the idea of a *new visual language* to talk about loss, absence, and disappearance and the possibility of generating attention via the reconfiguration of the data.

5. ANALYSIS: FILLING GAPS WITH OSINT

In 1944, planes aiming to photograph military targets in Poland captured an industrial complex. They took photographs of gas vents, lines of prisoners, and fumes rising from the quarries (Figure 2). None of it was correctly interpreted. Three decades later, two CIA agents—Dino Brugioni and Robert Poirier—discovered that those frames were the first aerial images of Auschwitz-Birkenau (Brugioni and Poirier, 1979). Photo interpreters rely on existing knowledge, but there «was no historical or intelligence precedence for genocide on such a scale» (Brugioni, 1983: para. 13). By 1944, some analysts had understood what was going on; but they did not know about the photos. Despite the birth of photointerpretation (DeLanda, 1991), nobody connected the dots. Ten years after Brugioni and Poirier's report, Farocki (1989) used their investigation in his documentary to tell how people declared «enemies of the *Reich*» were worked to death.

Overhead imagery is not new. For instance, the counter-mapping movement has used balloons and kites to take pictures for campaigning (Meier, 2015). Today, digital techniques and the hybridization of sources and methods are used to prevent the *silofication* that plagued 1944 photointerpretation. One example is the synchronisation of pictures and images from satellites and videos employed by FA in *The Killing of Muhammad al-Arab* (Forensic Architecture, 2020). FA collected videos recorded by witnesses from different angles, capturing multiple perspectives of the event; geolocated the material using salient features and vegetation in the background, and cross-referenced it against witness testimonies to estimate the area where al-Arab was shot (Forensic Architecture, 2020). FA performed acoustic analysis on the shots from the audio material to determine the rounds were fired from an automatic rifle from the Greek soldiers' location. Finally, FA refuted the possibility of Turkish involvement by looking at the vegetation—which obstructed a possible line of fire—the absence of Turkish armed men in the area, and the preliminary autopsy (Forensic Architecture, 2020).

Bellingcat is an investigative website that specializes in fact-checking on armed conflict. It became famous in 2014, when his founder, Eliot Higgins, investigated the downing of Malaysia Airlines Flight 17 as it flew over Ukraine during the Donbas War (Ahmad, 2019). In the face of accusations from all parties involved, this investigation—based on videos and pictures that people took of a Russian convoy crossing Ukraine—showed that separatists controlled a Russian missile launcher at the time and place from which the plane was fired. This investigation was later confirmed.

In 2019, after a trip that took him from India to Dubai, Armenia, Russia, Cuba, Ecuador, Colombia, Panama, and Mexico, 16-year-old Singh was close to reaching his destination, the US, when he fell ill at the Acayucán Migration Station and died (Bellingcat and Migrantes de Otro Mundo, 2020). The short film about Singh's death cannot rely on interviews with the deceased. Instead, it uses the pictures and videos taken with his phone, combined with interviews of those who met him, to fathom what happened. The organisations

that collaborated in this investigation had access to his phone's content and employed it to assemble and illustrate his story. This case shows the opportunities for analysis and communication of disappearances that public data on platforms offer. Investigative units do not need to procure sensing devices; it is enough to access the victim's account to obtain the digital documents stored in the *cloud*. This method —called *cloud forensics*— has been developed by crime fighters. However, it generates legal challenges and asymmetries around territoriality (the loss of location), possession (cloud content ownership), and obtention procedure (user authentication/data preservation) (Karagiannis and Vergidis, 2021), which are not the focus of this article.

Syrian Archive also depends on OSINT in *Strike on the Martyr Abdo Salama School in Sarmin* (Syrian Archive, 2020). Here, dozens of cluster bombs fell near and on the Martyr Abdo Salama School in Sarmin in 2020, leaving nine dead, five of them children (Syrian Archive, 2020). Syrian Archive analysed and verified 52 videos and images uploaded onto platforms showing the bombing and its aftermath (see Figure 3).



Source: Syrian Archive (2020).

Figure 3

Film still, *Strike on the Martyr Abdo Salama School in Sarmin*⁶

⁶ Available at: <https://syrianarchive.org/en/investigations/sarminschool>. Last access: 03/01/2021.

Syrian Archive's analysis uses satellite imagery showing the town and school before and after the incident, revealing the absence of planes over the town during the raid, indicating that the bombs were surface-to-surface. The usage of a Tochka missile suggests that Syrian government or Syrian government-affiliated forces may be responsible for the attack (Syrian Archive, 2020). So far, Syrian Archive has verified and preserved 349 videos that evidence 212 chemical weapons attacks. In Syria, there have been chemical weapons attacks since 2012, even though the country ratified the Chemical Weapons Convention in 2013. To a lesser degree, *Los feminicidios en México* (Salguero, 2019) employs OSINT to collect data on women's assassinations from news sources and other published information to populate the map and verify information as crowdsourced data. As seen below, *Los feminicidios en México* is more interesting for the role of the map to assemble scattered data.

Photography is more than studying images, since a snapshot is a single moment drawn from «a concrete sequence» (Azoulay, 2015: 159) that involves the photographer, the portrayed, the spectator, and the context. OSINT allows blending data sources, perspectives, and methods unavailable back in 1944, therefore filling visual gaps that data activism uses to make scattered, unnoticed data visible to generate attention.

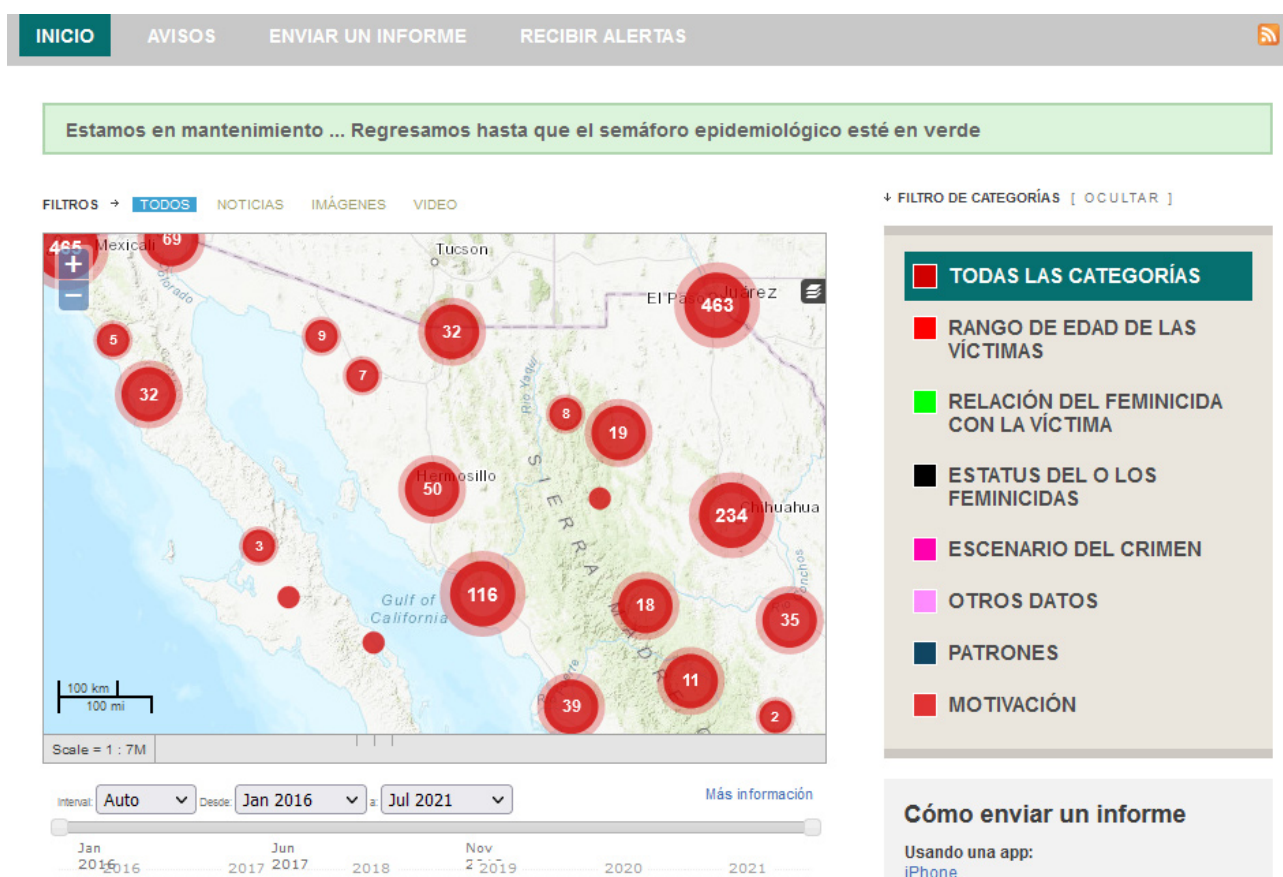
6. ANALYSIS: DIGITAL CARTOGRAPHY AND VOLUNTEERED DATA

Based on news stories and data offered voluntarily by people, María Salguero and other activists have been feeding, since 2016, the most comprehensive public dataset of femicide in Mexico. She communicates this dataset through an interactive map called *Los feminicidios en México* (Salguero, 2019). Her database has been used by NGOs, journalists, activists, Mexico's Congress, and families searching for loved ones. Sometimes the news media captures individual cases of femicides; but before Salguero's map, the big picture showing a systematic slaughter was missing. Two strategies are employed here: first, data analysis offers the possibility to aggregate data and, by so doing, to understand a phenomenon at a macroscale; and second, maps are effective communication tools as they are universally understood. Salguero's map shows the actual scale of femicide: it makes femicides appear at the individual and collective level. The platform offers the possibility of zooming in on one case; for instance, that of María Yolanda Pérez, shot dead in 2016 in Bocoyna, Chihuahua (Salguero, 2019). A colour code indicates that the report has been verified; that she was between 18 and 59 years of age, that her killer was missing, and his identity unknown. In 2020, 3,752 killings were reported (Amnesty International, 2021b), while only 8% of femicides were punished (Lettieri, 2017).

Salguero's chart is a deployment of the Ushahidi crowdsourcing platform, which allows activists to classify femicides by victims' age range, relation with the assassin, and status of the femicide (Salguero, 2019). In crowdsourcing, data are volunteered by filing a web form or sending a report via smartphone. People are invited to submit the reports via campaigns and public calls.

Crowdsourcing is different from just using public data, since it is based on the summoning capacities of the map to generate collaboration among victims, witnesses, activists, and ordinary people (Gutierrez, 2018a). By inviting active participation and expanding the network of interested people, crowdsourcing increases the chances of elevating the catastrophe to an

event. Citizen data share with public data the ability to compensate for the lack of official data. Data activists are familiar with *missing data* resulting from the inadequate official information about killings, violence, and discrimination. For example, while laws criminalising violence against women may have been enacted, policies to ensure adequate information collection are often not in place, or there are no data standards (Fumega, 2021). On the other hand, even though 18 countries in the Latin American region have criminalised femicide, official data are of poor quality, difficult to obtain, and contested. Apart from Salguero, other feminist activists and civil society organisations collect counter-data to fill institutional gaps (e.g., Latin American Initiative for Open Data).



Source: Salguero (2019).

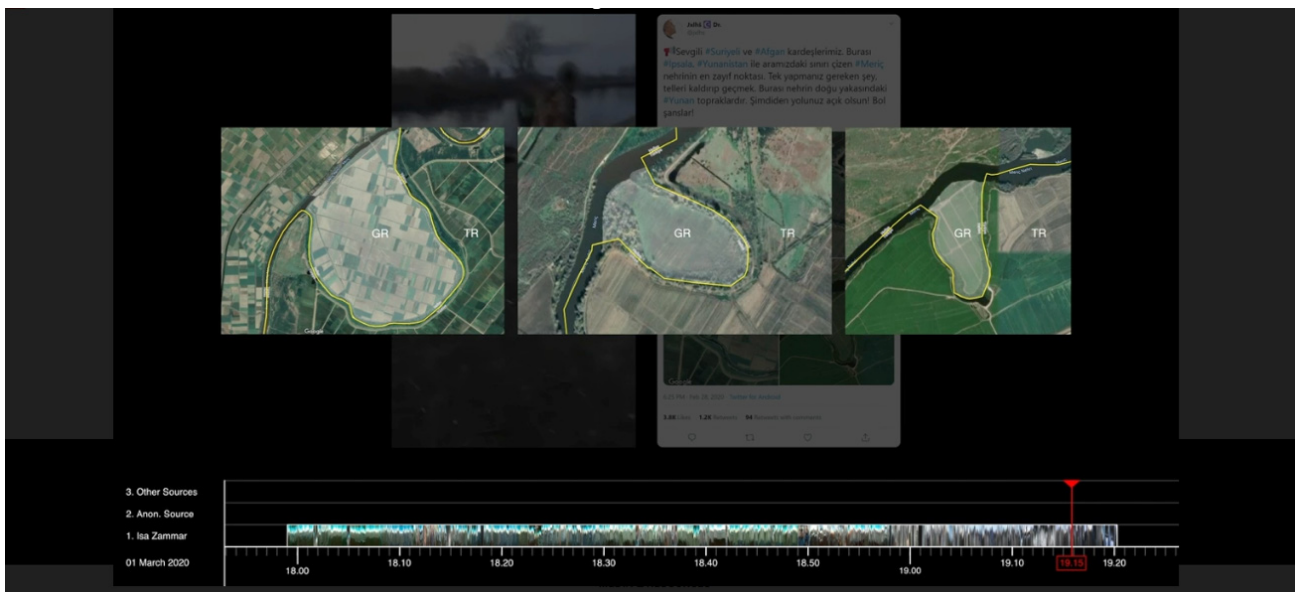
Figure 4
Screenshot, *Los femicidios en México*⁷

The four projects examined here employ cartography as a default visualisation tool. In *The Killing of Muhammad al-Arab* (Forensic Architecture, 2020), maps from satellite pictures were used in four ways: first, to reveal weaknesses in the frontier between Turkey and Greece, such as pockets of land where the border does not follow the river (see Figure 5), based on information circulated by people on Twitter.⁸ Second, to contextualise the videos taken and

⁷ Available at: <https://femicidiosmx.crowdmap.com/>. Last access: 03/01/2021.

⁸ For example: «(sic) Dear #Syrian brothers! Here is # psala, the weakest point of Meriç (Evros) river which draws the border between #Turkey & #Greece. All you need to do is just lifting up the fences and walking away. These

uploaded by refugees using their geographic metadata to identify and geolocate features, such as antennas and trees. Third, to show the visual angle covered by the sweeping motion of the camera. And fourth, to estimate the possible lines of fire of the rifles and the victim's position, based on eyewitnesses and recordings of the shooting, in a way similar to DeLanda's bastions maximized visibility and lines of fire (1991: 50). Thus, we are allowed to understand al-Arab's choice of border entry point, to see what he saw while crossing the border, and to observe him as he dies. The gunfire ensues and discovering who killed him is revealed by the camera's angles projected on the map. These maps expose hidden facts in the sequence they happened by proffering perspectives, geolocalisation, and movement.



Source: Forensic Architecture (2020).

Figure 5

Film still, *The Killing of Muhammad al-Arab*⁹

In *Manpreet vino de la India para caer en Veracruz, México* (Bellingcat and Migrants de Otro Mundo, 2020) there is no use of maps. However, the project «*Migrantes de Otro Mundo*» employs them to illustrate the convoluted trips that these migrants took to Latin America from different parts of the world. *Strike on the Martyr Abdo Salama School in Sarmin* (Syrian Archive, 2020) employs Google Earth satellite imagery to show where the town of Sarmin and the Martyr Abdo Salama School were and where the canister of the 9M79 Tochka missile fell. Thus, Syrian Archive not only relies on public data gathered via OSINT for its maps; it counts on allies offering data and verification from the ground.

On the other hand, only Salguero employs crowdsourced citizen data to populate her map. Citizen data crowdsourcing embeds asymmetries and invisibilities in collecting, analyzing, and visualizing the data. While data activists dictate how data are categorized, verified,

are Greek territories at the east flank of the river. <https://pic.twitter.com/nvayg6YU1Y>» The picture included in this message is no longer available.

⁹ Available at: <https://forensic-architecture.org/investigation/the-killing-of-muhammad-al-arab> Last access: 03/01/2021.

mapped, and offered from the security of their homes, the participation of data reporters (victims and witnesses) is often constrained by their lack of access to the mapping and their harsh circumstances (Gutiérrez, 2018a, 2018b). However, people enduring a catastrophe on the ground can benefit from the mapping effort. For example, an independent report on the role of Ushahidi in Haiti in 2010 concluded that this map provided key information in the initial period of the response, before large organizations were operational, and offered situational awareness and rapid directions with precision, allowing citizens to make decisions as the catastrophe unfolded (Morrow, Mock and Papendieck, 2011).

Since the Haiti map in 2010, digital cartography has become the visualisation tool by default in activism and humanitarianism (Gutierrez, 2018b). Data activist maps become counter-maps by charting areas, people, and processes that were previously ignored (Peluso, 1995). Mapping has always been the monopoly of states; meanwhile, counter-mapping activities have emerged in defiance of governmental initiatives to provide pieces of the commons to companies, for example, in Indonesia (Radjawali and Pye, 2015). Digital platforms combine volunteered data and the geoweb in quasi-real-time, which is especially useful during disasters. Crowdsourcing platforms allow humanitarians to make sense of complex crises and support relief efforts (Gutiérrez, 2018b). Critical data studies focus on similar uses of data science for justice, including *sousveillance* (Mann, Nolan and Wellman, 2003), data activism (Gutierrez, 2018a), Indigenous data sovereignty (Kukutai and Taylor, 2016), and data feminism (D'Ignazio and Klein, 2019).

In data activism, data procedures shape the representation of the disappearances. In *Manpreet vino de la India para caer en Veracruz, México* (Bellingcat and Migrants de Otro Mundo, 2020), we meet Singh through the digital traces he left behind on his phone before dying, which are then collected, interpreted, and mapped by the activists. The detectability by the data infrastructure via OSINT and the ability to define an event, as Pena (2020) states, sets the threshold of what is visible and invisible. This is based on data activism's ability to turn DeLanda's intelligence-acquisition machine around to observe the observer and capture previously missing or untraceable data.

7. DISCUSSION AND CONCLUSIONS

The development of new languages generated by data activism is an emerging field that requires more scientific inquiry at various levels. These new languages are part of a long tradition of mediations through which communities and collectives systematise, make sense, produce information, and seek visibility for their experiences of violence. Data narratives can be analysed based on the tensions between visibility/invisibility and hegemonic practices/counter-practices of representation.

Thus, it is necessary to expand the investigations in at least three dimensions: a) To study the different genres of representation, such as cartography, and establish how these new languages are influencing the conception and development of the practices of mobilisation, activism, and defense of human rights. To better understand visibility/invisibility regimes, a deeper discussion of the effects of these experiences is necessary, since invisibility is actively produced rather than just alluding to an absence, a shortage, or a deficiency (Elsaesser, 2017). b) To explore the relationships between the global sphere of communication (where most of these mediations circulate), and the local and regional contexts from which they emerge. Em-

phasis should be placed on the power relationships established between different participating actors and the effects that these mediations can have. More research is needed to reveal the degrees of autonomy and dependence with which local communities carry out their own mediations, and the power relations they establish for their production within the framework of collaborative relationships. And c) to analyse the effects of representation technologies, and its forms of dissemination and impact. For example, reactions to the broadcast of *The Act of Killing* in Indonesia varied from rage at «its celebration of killing» (Bjerregaard, 2014: 1), to hope that it would help the country face its past. As summarised in Table 2, the four projects explored in this paper show how OSINT and digital cartography help fill visual gaps.

Table 2
Comparison between the cases

Invisibility?	Disappearance		Liminality?	Gap filling method	Objective of data activism	Data & origins
	Forced?	Social?				
Missing data on Muhammed al-Arab's under-the-radar crossing and uncertain killing	No	A disadvantaged Syrian national crossing the Greek/Turkish border irregularly	The crossing of the Greek border with Turkey; the pocket of land where al-Arab was shot	OSINT, digital cartography, data crowdsourcing	Reveal who killed him, re-enact his dead	Open and public data (i.e., satellite data, platform data, news stories); satellite data (i.e., aerial imagery); interviews
Missing data on Manpreet Singh's arrival and death in Mexico	No	A disadvantaged Indian national arriving irregularly and sick to Mexico	The last stage of his journey in Mexico; the hospital where he was last seen	OSINT	Tell the story of his death	Open and public data (i.e., platform data); interviews
Missing data on the bombing of Martyr Abdo Salama School	No	9 people (including 5 children) trying to live «normal» lives in war-torn Syria	The children's school	OSINT, cartography, data crowdsourcing	Reveal who bombarded the school, name the victims	Open and public data (i.e., platform data, TV news); satellite data (i.e., aerial imagery); interviews; on the ground informants
Missing data on the femicides in Mexico	No	Thousands of women going about their business in a country with high levels of violence against women ¹⁰	Everyday life for thousands of women	OSINT, digital cartography, data crowdsourcing	Visualise femicide in Mexico, name the victims and victimisers	Open and public data (i.e., news stories); crowdsourced data

Source: Elaborated by author.

¹⁰ Mexico ranks fourth among the most dangerous countries for women (World Population Review, 2022). Only about 33% of women in Mexico reported feeling safe walking alone at night; additionally, Mexico ranks third for non-partner sexual violence (World Population Review, 2022).

Invisibility refers to lack of data or data not easily available about the victim/s. *Forced disappearance* asks whether the disappeared person/s was/were missing because of a state-sponsored capture. *Social disappearance* refers to whether the disappeared has been invisibilised due to multiple discriminating factors. And *liminality* refers to the place or process where transition, danger, denial or suspension of rights, anonymity, or irregularity occurred. None of these cases involve forced disappearances investigated typically by human rights agencies; hence, the social disappearance label suits them better. The social disappeared here were victims of systemic neglect and violence. Al-Arab and Singh stepped into an uncertain liminoid sphere and lost his life. Meanwhile, ordinary people in the Martyr Abdo Salama School and women in Salguero's map died because they were either living within the gaze of the intelligence-gathering machine or were women in a violent country. Liminoid sites can range from a narrow stretch of land between Greece and Turkey to the colossal milieu of Mexico City. In the four projects, the visualisation of public or crowdsourced data prevented the silencing of these deaths.

The visual forensics approach is not about a smoking gun or a whistle-blower's testimony but rather about collecting pieces of an acoustic, visual, and time puzzle that, taken together, constitute evidence of an event, making the invisible apparent. By adopting OSINT and maps to visualise disappearance, data activism has reached two main results. First, the increased accuracy of digital tools, to the point that these investigations can expand their impact and generate attention and evidence that can be employed at court. Traditional human rights investigations and journalistic, activist, and humanitarian practices used to rely on witnesses declaring what they perceived or remembered of events. In contrast with Farocki's predecessors, digital technology here connects the dots convincingly (Gutiérrez, 2021).

Second, these and similar projects seem to have inspired others: FA was founded in 2010, Syrian Archive in 2011, Bellingcat in 2014, and Salguero started her map in 2016. Although direct influence is impossible to demonstrate, their methods have impacted how journalists and activists operate today. Conflicts in countries including Syria, Myanmar, Yemen, Democratic Republic of Congo, and South Sudan have displaced millions. These liminoid events are being increasingly investigated using audio-visual material on platforms such as Facebook and TikTok, verifying and chronolocating it to synchronise timelines, and then, tracking landmarks and individuals by using visual and audio markers (e.g., BBC World Service, 2019; Triebert *et al.*, 2019; Weaver and Quinn, 2013). Criminal Tribunals are beginning to use OSINT in their prosecution of international crimes too.

While journalism, activism, and humanitarianism adopt these data approaches, documentary films representing the invisible are still to catch up. The short films launched by FA, Bellingcat, and Syrian Archive are pioneering experiences pointing to new filmic possibilities. Still, they seem trapped in activist circuits, and their impacts beyond these circles seem limited. If the documentary film catches up with these approaches, it will engender a new development in the tradition of the cinema of absence initiated after the Holocaust. Like in the cases of Singh and al-Arab, these techniques can make the lost voices of the disappeared reappear on film. The Uyghurs of the Chinese education camps, the migrants disappeared in the Mediterranean, the protesters vanished in violent repression, the bombarded inhabitants of Syria, Gaza, and Ukraine are waiting for the Farockis and Oppenheimers of the platform era.

However, this analysis also suggests that OSINT and digital cartography could be part of an alternative production procedure to the documentary that is adapted not only to new data

production and visualisation capabilities, but also to the digital platforms that dominate the show's dynamics, starting a new form of telegeny, determining what is an event, and generating attention.

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