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Perceiving Sexual Harassment, Conceiving Securitized Spaces: HarassMap and the Promise and Perils of GIS technologies

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Abstract

HarassMap, an advocacy organisation based in Cairo, operates an online mapping interface that uses crowdsourcing and Geographical Information Systems (GIS) technologies to map incidents of sexual harassment in real time. Its interface allows for a reconfiguration of Cairo's urban landscape into 'safe' and 'unsafe' neighbourhoods, and raises important questions about the use of georeferencing and mapping technologies in the interest of security. By means of a walkthrough method, this thesis analyses the affordances and material arrangements of HarassMap's interface to render visible that behind a smooth and calibrated cartographic visualisation lies an abstraction of bodies seamlessly reconfigured into calculable georeferenced targets – giving the impression of totalising and penetrable spaces, disentangled from issues of class, race, gender and power. In contrast, what my reading of HarassMap attempts to demonstrate, grounded in Lefebvre's work on the production of space and Actor-Network-Theory (ANT), is that whilst digital spatial technologies seemingly produce 'objective' realities – space is inextricably gendered, racialised and subject to power relations, affecting those living in it in deeply asymmetrical ways.

Keywords: sexual harassment, GIS, security governance, securitised spaces, Egypt

Introduction

In 2010, HarassMap, a Cairo-based advocacy organisation, launched an online mapping interface that employs crowdsourcing and Geographical Information Systems (GIS) technologies to map incidents of sexual harassment in real time (HarassMap, 2010a). The rationale behind this platform and the use of these technologies was to provide a readily accessible, anonymous, and participatory interface that allows users to not only report an incident but also visualise all other incidents onto a cartographic plane, providing a representation of the landscape according to the volume of reported incidents (Grove, 2015). The interface created by HarassMap, in response to the prevalent issue of sexual harassment in Egypt, raises important questions about the use of crowdsourcing and georeferencing technologies in the interest of security (Amar, 2010, 2011b, 2013; Grove, 2015; Leszczynski & Elwood, 2015).

GIS is a combination of tools that allows to gather, manage, and analyse spatial data (data that has been georeferenced) in the form of multi-layered cartographic visualisations (Dunn, 2007). In other words, GIS works with a base map upon which multiple layers and additional data can be overlaid. Hence, GIS can be modelled to serve different purposes such as identifying trends, monitoring and managing events, and making forecasts, to name but a few (Dunn, 2007). GIS became more widespread throughout the 1960s as the technology was increasingly adopted by national agencies and was later commercialised to the wider public. As the technology gained popularity and a reputation, one of the fundamental shifts is argued to be the development of open source GIS software – in which any user equipped with a computer has the ability to create and collaborate on their own GIS projects (Kar, Sieber, Haklay, & Ghose, 2016).

The use of GIS technologies in the interest of security is a growing phenomenon (Burns, 2014). Recent years have witnessed an increased use of GIS by international organisations and humanitarian NGOs (Grove, 2015; Moncada, 2010). The use of GIS has, for instance, transformed traditional humanitarian response models, developing a new form known as ‘digital humanitarianism’ which uses technology to collect, process and represent mass-aggregated data generated from users (Burns, 2014; Leszczynski & Elwood, 2015).

A number of scholars have studied the ways such technologies are changing and shaping our world and have subsequently raised concerns about the social and political implications of GIS, in particular regarding access, representation, epistemologies, and accessibility (Burns, 2014; Elwood, 2006b; Grove, 2015; Kwaku Kyem, 2001; Leszczynski & Elwood, 2015). Critical GIS, as the discipline has come to be known, emphasises the dangers of treating such

technologies as merely objective and technical tools, which seemingly operate outside politics. Scholars within this field have argued for the necessity to carefully examine the underlying assumptions and structures in which such technologies operate and its implications for the kinds of knowledge it produces (Corbett & Rambaldi, 2009; Dodge & Kitchin, 2013; Kwaku Kyem, 2001; Kwan, 2002). Starting from the notion that these technologies are infrastructures, we open ourselves to understanding them as more than enabling, seamless, objective devices, but rather as crystallised systems of power which engage in a continuous process of negotiation. Actors, human and nonhuman, engage in a contestation over how knowledge should be captured and visualised, which ultimately leads to a particular configuration of social life (Elwood, 2006b; Grove, 2015; McLafferty, 2002).

The negotiation and legitimisation of certain forms of knowledge over others, as mediated through GIS technologies, is what Burns refers to as ‘knowledge politics’ (Burns, 2014, p. 52). Knowledge politics, then, works to reify existing social, geographical and power hierarchies. Disguised under the goal of standardising and rendering data objective, GIS technologies engage in practices of classification and categorisation, which, as Bowker and Star (1999) argue, are always political and embody an aspect of violence. “Classification systems are often sites of political and social struggles, but these sites are difficult to approach. Politically and socially charged agendas are often first presented as purely technical and they are difficult even to see.” (Bowker & Star, 1999, p. 196). This is especially the case within the realm of technology where the emphasis is on seamlessness and smooth transitions – obscuring the heterogeneity and political nature of this type of infrastructures (Vertesi, 2014).

Today, hundreds of thousands of companies are using GIS technologies, translating endless amounts of data into real-time, interactive, and readily zoomable digital representations (Grove, 2015; Leszczynski & Elwood, 2015). It has fundamentally changed the way humans relate to and understand the world. The accessibility that such technologies offer, insofar a user is able to manipulate how the data is displayed on their own device, gives the impression of totalising and penetrable spaces which have been deceptively disentangled from any social, political, economic, historical contexts (Graham & Zook, 2011; Grove, 2015). In the context of security, state authorities are adopting GIS technologies precisely because it allows for new and advanced modes of control (Crampton, 2003; Dillon & Lobo-Guerrero, 2008; Muller, 2008). These technologies are also proliferating amongst humanitarian initiatives and advocacy groups that are increasingly drawn to the accuracy, precision, and view of ‘everything from nowhere’ that these devices can offer.

As such, the present research aims to problematise the use of GIS technologies in the interest of security and illustrate that underneath seemingly smooth and accessible spaces lie important power structures and decision-making processes that inevitably privilege certain agendas, forms of knowledge, and actors over others. The present research thus seeks to answer the following research question: *How does HarassMap produce securitised public spaces?*

My interest lies in examining the interplay between the body, space and technology and how these devices negotiate issues concerning security and control. The accessibility and penetrability of GIS technologies into spaces, neighbourhood, communities, bodies, create the impression of what Haraway describes as ‘seeing everything from nowhere’ (Haraway, 1988, p. 581). A view that is seemingly infinite, working under the guise of neutrality and precision—‘the god trick’ – which hides the power relations and biases based on which it functions (p. 581).

To investigate the above, I will approach HarassMap as a case study. HarassMap, which uses GIS and crowdmapping technologies as primary tools to combat sexual harassment in Egypt, presents a unique case for considering how in its efforts to empower women, engages in a contestation over space and knowledge production (Elwood, 2006b; Grove, 2015; Leszczynski & Elwood, 2015; McLafferty, 2002). More specifically, I am interested in analysing how HarassMap’s interface produces spaces that are structured in the interest of security.

In my analysis I will be attentive to which imaginaries were considered in the creation of its platform and which were excluded. Furthermore, I will consider the implications of reconfiguring the landscape into ‘hotspots’ – areas in which incidents of sexual harassment are most prevalent – which risks falling into a vicious self-referential effect of labelling ‘safe’ and ‘unsafe’ neighbourhoods as such, resulting in spatial stigmatisation (Grove, 2015; Wacquant, 2007).

The case of HarassMap also reflects a broader concern for the ways in which we interact with technology and vice versa. The human drive to optimise and constantly innovate technology in the interest of bettering ourselves and our societies is something that is often not problematised. A human-centric approach in studying interactions with technology disregards the agency nonhuman actors have and exert on everyday life. We inhabit a world surrounded by matter, and such undeniable materiality continues to be marginalised in various modes of inquiry about our social world (Coole & Frost, 2010). Dominant discourses which have emerged under the cultural turn have been critiqued for their inability to adequately attend to issues concerning “matter, materiality and politics in ways that do justice to the contemporary

context of biopolitics and global political economy” (Coole & Frost, 2010, p. 6). As such, this thesis aims to extend the discussion on interrelations between space, technology and the body and how technologies are increasingly redefining our social realities.

Theoretical Framework

In this section I will discuss relevant theories and approaches in understanding how HarassMap produces particular kinds of spaces. I begin by discussing the central theoretical tenets of the thesis, namely Henri Lefebvre’s and David Harvey’s work on the production of space. To grasp the intersectionality of space production, I consider how feminist GIS perspectives and Actor-Network Theory (ANT) complement my reading of HarassMap.

Lefebvre and Harvey on the Production of Space

Henri Lefebvre’s seminal *The Production of Space* (1974/1991) puts forth the idea that space is a reproduction of social relations. Lefebvre understands ‘space’ as a “result of a continuing interaction between society, space and the individual.” (Sletto, 2002, p. 394). Space, in this sense, is both dynamic, fluid and unfixed (Lefebvre, 1974/1991). Taking this notion of space further, Lefebvre (1974/1991) argues that space is not only socially reproduced but that space itself produces particular social relations.

Lefebvre’s theory of production of space takes the form of a dialectic triad consisting of spatial practice, representational space and spaces of representation (Elden, 2007; Sletto, 2002). Spatial practice refers to space in its physical form, space that is real and empirically quantifiable – space that is *perceived*. Representational space is that which is investigated and instrumentalised by social scientists that aim to study how space is experienced by individuals – space that is *lived*. Spaces of representation refer to the conceptualisations and intellectual delineations of space – space that is *conceived* (Elden, 2007; Santos Junior, 2014; Sletto, 2002).

Each component of this model (see Figure 1) plays a unique role in the production of space and are both “dialectically interreactive and interdependent” (Sletto, 2002, p. 394). For instance, spaces of representation rely on the body’s capacity and experiences of spaces and thus is connected to representational space. Spaces of representation are also informed by ideology, and are thus also connected to spatial practice (Sletto, 2002). As such, the three components delineated by Lefebvre’s triad can be understood as both at tension with and being dependent on one another.

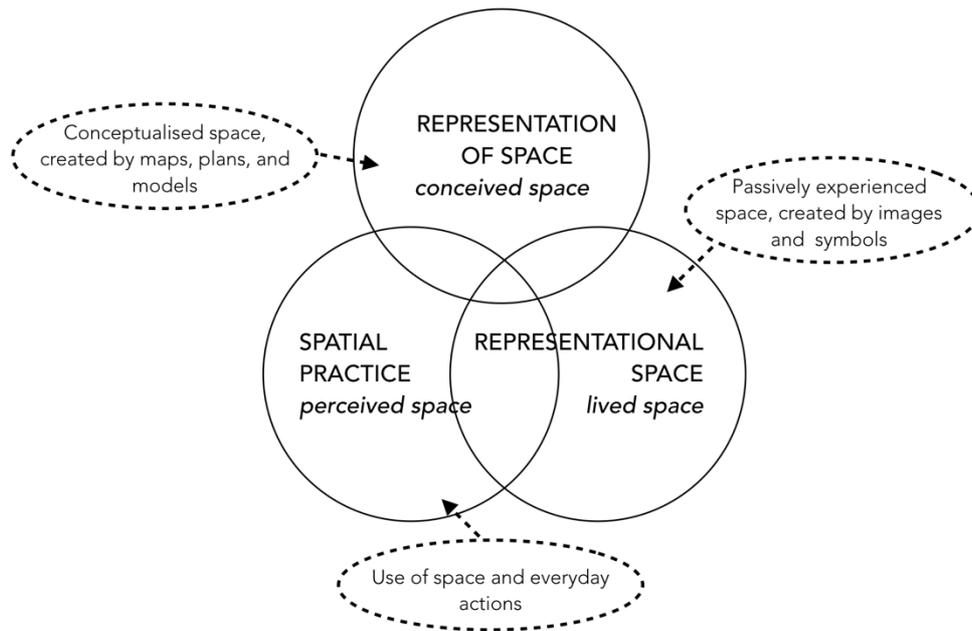


Figure 1. Lefebvre's triad of space production

An overarching theme in Lefebvre's work is the notion of abstraction and abstract space (Wilson, 2013). Lefebvre's triad of space production is characterised by a tension between the *conception* of space on one hand, and the *perception* of space on the other. The way space and time is experienced by individuals has fundamentally changed (Giesecking, Mangold, Katz, Low, & Saegert, 2014). Historically, one's experience of time and space was largely drawn from lived experiences; thus, time and space were conceived via means of the body. However, with the creation of mathematical calculations, space could be geometrically broken down into fixed numerical units which could subsequently be visualised onto a map (Giesecking et al., 2014). This in turn allowed for what Lefebvre (1974/1991) understands as a 'system of abstraction', marking an ultimate shift from the body's *perception* to its *conception* of space. The domination of the *conception* over the *perception* of space results in a process in which space is no longer produced or informed through the body, but rather, through fixed and homogenous representations such as maps, grids and models (Giesecking et al., 2014; Unwin, 2000).

David Harvey, another leading figure in the field of Geography, has reflected extensively on Lefebvre's work on the production of space (Harvey, 1973). Following Lefebvre, Harvey (1973) proposes a three-fold division of space as *absolute*, *relative* and *relational*:

If we regard space as absolute it becomes a 'thing in itself' with an existence independent of matter. It then possesses a structure which we can use to pigeon-hole

or individuate phenomena. The view of relative space proposes that it be understood as a relationship between objects which exists only because objects exist and relate to each other. There is another sense in which space can be viewed as relative and I choose to call this relational space – space regarded in the manner of Leibniz, as being contained in objects in the sense that an object can be said to exist only insofar as it contains and represents within itself relationships to other objects.

(Harvey, 1973, p. 13)

Harvey (1973) situates his three-fold division alongside Lefebvre's triad of *perceived*, *conceived* and *lived* space, resulting in a three-by-three matrix which allows to further examine the possibilities and tensions that live at the intersections of each category (see Appendix A).

The present research will draw from both Lefebvre and Harvey's work on space production but will pay particular attention to the process of abstraction, examining the tensions that arise between the *perceived* and the *conceived space* in the case of HarassMap. This will be further analysed in the context of GIS technologies and their role in mediating and enacting space production. An operationalisation of how these theoretical lenses will be applied to the case study will follow in the methodology section.

Feminist Critiques of Science, Vision and GIS

The critique of maps being more than accurate reflections of an 'observable reality' on the ground is now widespread (Dorling, 1998; Kitchin & Dodge, 2007; Kitchin & Fuller, 2003). Shifting from an empiricist view of spatial knowledge, several disciplines have emerged in search of new and alternative ways of thinking about space, digitally and nondigitally (Kitchin & Dodge, 2007). Feminist perspectives, for instance, have been instrumental in demonstrating the interconnections between space and gender. Feminist critiques of science have laid the foundations for scholars to reflect on the implication of GIS' vertical and detached vision of space (Elwood, 2006a; Elwood & Leszczynski, 2018; Kwan, 2002; Massey, 1994; Pavlovskaya & Martin, 2007; Schuurman & Pratt, 2002). Haraway's (1988) notion of 'the god trick' (p. 581) is often used to illustrate the power and objectification of an elevated gaze that reduces the world into calculable space (Bondi & Domosh, 1992; Curry, 1995; Pavlovskaya & Martin, 2007; Roberts & Schein, 1995). Ultimately, feminist scholars within the field have sought to demonstrate that conceptions of space cannot be divorced from issues of gender.

As a result, significant work has been done in re-envisioning GIS to include feminist visualities (Elwood, 2006a; Kwan, 2002; Leszczynski & Elwood, 2015; McLafferty, 2002).

Yet, the inclusion of such voices have often echoed tropes of victimhood, particularly in the context of security governance (McLafferty, 2002). Efforts of empowerment through means of geospatial technologies regularly focus on women's protection, treating them as solely rescue targets (McLafferty, 2002). The very technologies designed to improve women's mobility, for instance, work to reproduce gendered public spaces while also enabling a culture of masculine dominance in the streets (McLafferty, 2002).

This is precisely why critical GIS scholars have advocated for understanding this technology as more than just a spatial one, but as a techno-political infrastructure. If one is to talk about space, one is also inevitably talking about issues of class, race, gender and power which cannot be disentangled from one another (Grove, 2015; McLafferty, 2002).

Actor-Network-Theory: Agency and Materiality of Technological Devices

If one is to understand spatial technologies like GIS as infrastructures imbued in all aspects of life, one must also consider the agency and material mediation of such devices.

Actor-Network Theory (ANT) approaches the study of the world by conceptualising it as a network of relationships between human and nonhuman actors (Prior, 2008). ANT places human and non-human agents on an equal plane and therefore considers innate objects to have agency, and not as simply passive entities. It is important to note that ANT, as proposed by Law (2008), should not be understood as a theory. Rather, ANT can be more adequately understood as a toolkit consisting of a set of devices that allows one to view the world beyond dualistic terms (Law, 2008). ANT, then, does not attend to questions of 'why' but questions of 'how'. I now turn to central elements of ANT which are key in understanding the agency and materiality of HarassMap's interface.

ANT understands the world as enactments of relations and networks, which continuously reorganise and reproduce amongst a heterogeneity of actors (Law, 2008). It approaches social phenomena by attending to both human practices and material arrangements. Treating material entities as such will guide my reading of HarassMap in attending to the affordances of the interface and examining how its design and visual configuration has important implications for the way people relate to public spaces in Cairo.

Studying the interface from an ANT perspective also considers its performativity – circulating and enacting particular forms of knowledge over others. Here, drawing from the notion of *translation* as discussed by Law (2008) is useful. Translation is to make two words equate one another. However, this is in itself impossible as no two words can be equivalent. Thus, translation is inherently also betrayal: "*traduction, trahison*" (Law, 2008, p. 144).

Translation then, is committed to making an equivalent whilst also changing the object in question. Considering the above in the context of HarassMap, I will examine the way the interface translates incidents of sexual harassment into georeferenced markers and what ultimately is able to circulate within the device and what is inevitably excluded.

ANT, thus, provides valuable insights into an alternative reading of HarassMap – one that sheds light on the ways the interface can be understood as a device with agency which “can drive and shape political, economic, medical and scientific activities just as much as humans” (Prior, 2008, p. 833). Precisely because such an alternative reading strives to understand the multiplicity of actors involved in decision-making processes that collectively shape HarassMap’s cartographic representation, an ANT approach will provide the theoretical and methodological basis to do just that.

The theoretical framework presented above will thus guide an analysis of HarassMap that seeks to examine how the interface engages in a production of securitised public spaces and forms of knowledge, through a process of abstraction, translation and reconfiguration. The modality and affordances of the interface raise important questions regarding security governance, power structures, knowledge production and female empowerment which the present study seeks to problematise.

Methodology

In this section I will firstly situate my research to help the reader understand the positionality from which I approach my analysis of HarassMap. I then discuss the methodology employed to study its interface and an overview of the case study itself. This section will conclude with an operationalisation of how the thesis’ theoretical tenets will guide my analysis.

Epistemological and Ontological Orientation

This thesis situates itself within the critical/transformational paradigm (Kivunja & Kuyini, 2017). The critical/transformational paradigm seeks to address issues of power, social justice, discrimination and oppression (Romm, 2015). Ontologically, it seeks to investigate how certain forms of knowledge become privileged over others (Romm, 2015). Epistemologically, emphasis is placed on collectivity and empowerment between the researcher and participants, and the practicality of knowledge production insofar that it has the capacity to empower those that are subject to marginalisation (Romm, 2015).

I take this paradigm as a starting point and guide throughout the research process, but not limiting myself to it. I seek to maintain a degree of self-reflexivity, as well as recognising the

shortcomings of research paradigms in themselves. I draw from indigenous research methodologies, which advocate for self-reflexivity and accountability from the researcher in problematising their positionality and privilege. In particular for this case study, I am committed to interrogating the power behind labelling, naming, and representing the data from the analysis (Chilisa, 2012).

Method

The case study, HarassMap, will be analysed by means of the walkthrough method. Originally, the walkthrough method was a technique used in software engineering and User Experience (UX) research geared at predicting user behaviour and optimising experience (Light, Burgess, & Duguay, 2016). Recent and alternative uses of the method, however, have focused on studying the intentions for interfaces (e.g. their purpose) and their subsequent design (e.g. layout, configuration, features). More concretely, the method is employed “to illuminate the material traces of those intentions, and thereby to critically examine the workings of an app as a sociotechnical artefact” (Light et al., 2016, p. 886).

The walkthrough method borrows from principles of ANT and Science and Technology Studies (STS) insofar that it understands both sociocultural and material aspects to be shaping social reality (Light et al., 2016). Therefore, it attends to the material aspects of a given technology by analysing its affordances and constraints which shape users’ relationality to the technology. Cultural aspects imbedded within the technology are also key in comprehending how users experience and relate to the device. Hence, the method is attentive to the use of discourses, narratives and symbols which may work to privilege certain forms of knowledge over others (Pfaffenberger, 1992). In essence, then, the walkthrough method seeks to deconstruct and critically analyse an interface’s technological architecture (Light et al., 2016).

The Case Study: HarassMap

This thesis will answer the research question by means of a single-case study analysis. Case study research, as defined by Yin (1989) aims to “understand a real-world case and assume that such an understanding is likely to involve important contextual conditions pertinent to [the] case” (p. 45). Case study research thus is a mode of inquiry which does not try to separate the phenomena from its context.

I am adopting a single case study as opposed to multiple as the analysis will attend to the complexities and particularities of the case at hand, rather than focusing on comparability between multiple cases (Stake, 1995). The emphasis is on gaining an in-depth understanding

of the case itself, rather than on generalisations (Stake, 1995). Nonetheless, the case study will also be instrumental, meaning that the analysis will enable a broader discussion about digital spatial technologies as infrastructures that intersect with issues of power, gender, class and race.

The case in question, HarassMap, is a Cairene volunteer-based initiative launched in 2010 by four women, Rebecca Chiao, Engy Ghozlan, Sawsan Gad and Amel Fahmy, with the mission to tackle the endemic issue of sexual harassment in Egypt (Grove, 2015; Young, 2014). HarassMap uses the Ushahidi open-source crowdsourcing platform and frontline SMS technology to provide an online reporting and mapping system of incidents of sexual harassment (Grove, 2015). Users can anonymously submit reports of sexual harassment, either experienced or witnessed, providing a detailed description, including a location, time stamp and indicating the type of harassment (e.g. ogling, stalking, catcalling, indecent exposure etc.).

The georeferencing and mapping of the report operates in real-time, meaning that the location of the incident is plotted onto the map instantly. However, the entirety of the report is only made publicly available after HarassMap reviews its contents (HarassMap, 2014). Through this web-based interface, users are able to visualise all collected reports, with precise locations, details, and on some occasions, photographs/videos of the encounters. The map offers a filter function (e.g. filtering by categories of sexual harassment) as well as a zooming toggle which allows users to visualise the map from different perspectives (see Figure 2).

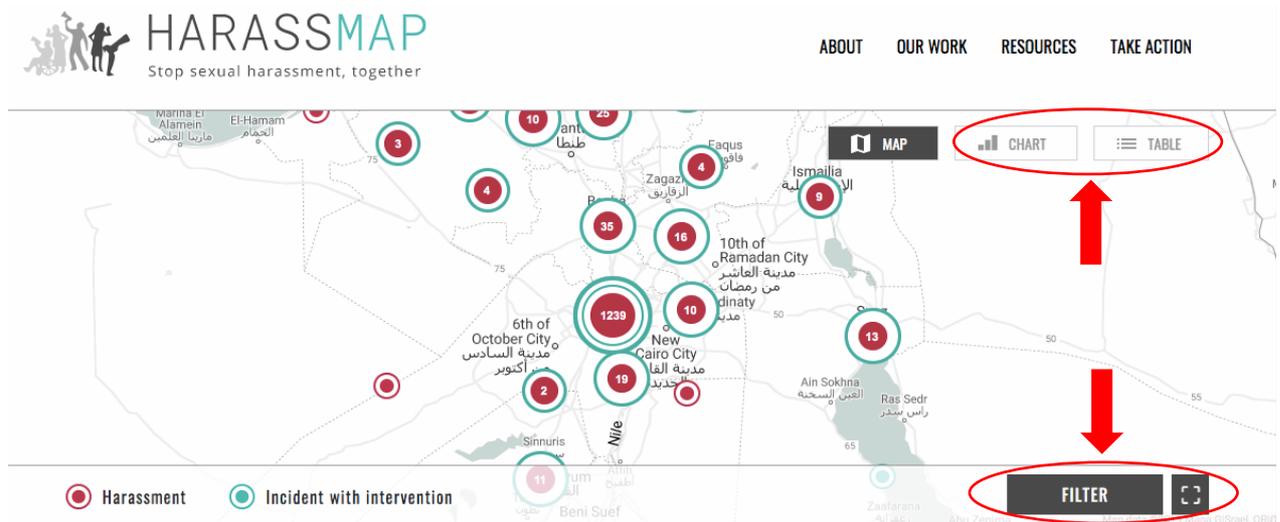


Figure 2. Screenshot from HarassMap. "The HarassMap Effect". (2010). Retrieved from harassmap.org

HarassMap's model is a combination of online and offline initiatives. Besides the online reporting platform, HarassMap runs several community outreach programmes, campaigns and partnerships that aim to educate and increase awareness of the issue (HarassMap, 2010a).

The Ushahidi open-source platform uses the Google Maps application programming interface (API) to geocode crowdsourced data (Ushahidi, 2008). Ushahidi was originally launched as a crisis-mapping tool but is now used by numerous third parties for customised crowdsourcing projects (Grove, 2015). Open-source platforms like Ushahidi make the reporting and collection of georeferenced data increasingly easy to the extent that its co-founder, Erik Hersman, argues it is leading to ‘wasted crisis data’ – where the data collected outweighs the capacities for such platforms to consume it (TED, 2009). To address this, a filtering tool was created which rates the information submitted and the users themselves, thus providing refined results leading to “a better understanding of the probability of something being true or not.” (TED, 2009, 3:23). Hersman’s choice of words here are indicative of the way data is understood in relation to space, technology and the body. It points to the dominant epistemologies within digital spatial technology which are informed by rational calculation (Crampton & Elden, 2006). Like Ushahidi, HarassMap too engages in a data ordering and filtering process. The way HarassMap’s platform is designed, from the setup of reporting the system, the categories and labels it uses and its articulation of the issue of sexual harassment, reveals the affordances and constraints of the interface, which ultimately uncover its understanding of space, technology and the body. This will be central to the analysis in this study.

Since its launch in 2010, HarassMap has received worldwide media attention and recognition for its efforts to tackle sexual harassment through means of crowdmapping technologies. Numerous NGOs and activist groups have adopted HarassMap’s crowdmapping model to fight against sexual harassment, including Safe City (India), Harasstracker (Lebanon), Ramallah Street Watch (Palestine), Safe Streets (Yemen), Bijoya (Bangladesh), Name and Shame (Pakistan) and Women Under Siege (Syria) (HarassMap, 2010a). The combination of crowdsourcing and digital spatial technologies is increasingly used for tackling social issues, as its bottom-up format enables user-generated knowledge (Leszczynski & Elwood, 2015).

These technological advances have thus allowed for new kinds of digital spatial epistemologies, particularly in creating a platform for marginalised and subaltern voices in the spatial knowledge production (Elwood & Leszczynski, 2018; Grove, 2015; Kwan, 2002). While HarassMap’s efforts do indeed bring heightened awareness and provide a platform for people to speak out on sexual harassment, it also raises important questions about the way in which the organisation and more specifically its platform, is designed – what imaginaries were considered when designing the platform? Who benefits and who does not from using it? What are the social and geopolitical implications of relying on technological solutionism for

addressing complex social phenomena? The above are some of the questions which will guide the present analysis.

Operationalisation

The walkthrough method approaches the study of the interface in two ways: 1) by determining the *environment of expected use* and 2) the *technical walkthrough* procedure. The *environment of expected use* involves the researcher identifying how the interface is expected to be used by its users. This process involves establishing the interface's *vision, operating model* and *governance*. Such information can often be found within the interface but can also include related data outside of it (Light et al., 2016).

The *technical walkthrough* functions as the main source of data collection. It consists of a step-by-step navigation and documentation of the interface, requiring the researcher to embody the position of the user (Light et al., 2016). While traversing the interface, I will be attentive to relevant actors – features, flow of activities, icons, buttons – which configure how a user navigates and relates to the platform. For instance, I will consider the accessibility of reporting an incident, the availability and transparency of information, the visualisation of the map, use of icons and so forth.

I will also consider HarassMap's discourse of sexual harassment – how it frames the issue, word choice, labels and categories, visuals and symbols. Taking the above into consideration, I will reflect on how the configuration of the interface invokes a particular ideal user and use, and how that reifies certain power structures – how certain forms of knowledge become privileged over others and how the interface empowers certain persons while marginalising others. This will subsequently be explained through concepts of ANT including circulation, performativity, and agency.

The *technical walkthrough* is conducted in three stages: registration and entry, everyday use and deregistration. It resonates with aspects of ethnographic research as it involves producing field notes on the basis of observation. As such, the analysis of HarassMap will follow a two-tiered structure. In the first tier, I will discuss findings from the walkthrough of the interface while also elaborating on discoveries relevant to my research question. In the second tier, I will further contextualise the findings in light of the theoretical framework, namely the production of space as discussed by Lefebvre. I will interpret the results alongside Lefebvre's triad and engage with the abstraction of space in the context of HarassMap. I will explore how the translation of bodies and occurrences of sexual harassment into georeferenced markers can be understood in light of tensions between the *perceived* and *conceived space* (Lefebvre,

1974/1991). Ultimately, I seek to examine how HarassMap's translation and de/territorialisation of spaces and bodies produces particular kinds of public spaces. In further reflecting on this relationship, I will consider both Lefebvre's and Harvey's propositions on the 'right to the city'- and how we can use that to think about the kinds of cities we want to live in.

Given the scope and the methodology of this research, I will study the interface from the perspective of the ordinary user, thus my interaction with HarassMap and subsequent data collection will solely take place through the interface. Hence, I have not arranged to speak with members of HarassMap to validate this research design. However, I will consider public remarks made by HarassMap's members in order to elucidate the findings from the walkthrough. Furthermore, due to ethical considerations, a report has not been submitted for the purpose of this research. As such, observations will be made on the basis of what is available/visible to an unregistered user and one which has not submitted a report.

Analysis I: The Walkthrough of HarassMap

In this section I will discuss findings from the walkthrough of HarassMap's interface. Firstly, I will establish the interface's *environment of expected use* by identifying the vision, governance and operating model of the platform. Secondly, I will conduct the *technical walkthrough* and present relevant findings while elaborating on discoveries relevant to my research question.

HarassMap's *Environment of Expected Use*

Vision. The vision behind an interface refers to the overall purpose of the platform, expected use and user base. Whether stated explicitly or implicitly, the vision behind an interface is key to understand user appropriation (Light et al., 2016).

HarassMap's vision is stated on its website as follows: "to build a society that guarantees the safety of all people from sexual and gender-based violence" (HarassMap, 2010, para. 2). Its core mission is to "break the social acceptability of sexual harassment and work towards building a zero-tolerance society" (HarassMap, 2010b, para. 1). This is believed to begin with the role of bystanders, the logic being that if more bystanders intervene and/or speak out against sexual harassment, harassers would face harsher repercussions, such as public shaming, and would therefore be deterred (HarassMap, 2010a). In attempting to achieve its mission, HarassMap employs a number of online and offline activities, and multiple technologies, including the harassment map. The harassment map serves the following main functions:

- providing testimony by those who experience or witness sexual harassment as to the seriousness of the problem;
- serving as data for understanding how sexual harassment is evolving in Egypt;
- providing HarassMap with information that can be used to tailor communication campaigns and research programs;
- and serving as a tool for community outreach teams to motivate the public to stand up against sexual harassment.

(HarassMap, 2014, p. 2)

The map is meant to create visibility and awareness of the issue of sexual harassment in Egypt. While harassment is predominantly experienced by women, HarassMap seeks to create a platform for ‘everyone’, by making it readily accessible and easy to navigate.

Operating model. The operating model behind an interface reveals the platform’s underlying political and economic interests through means of revenue sources, funding, business strategy and data exchange between the platform and its users (Light et al., 2016).

HarassMap, as a volunteer-based and non-profit initiative, operates through public donations and funding (HarassMap, 2014). For instance, it received a two-year grant from Canada’s International Development Research Centre (IDRC) to investigate the effectiveness of crowdsourcing technologies for collecting data on ‘sensitive’ issues such as sexual harassment (IDRC, 2013). Additionally, in 2013, HarassMap raised over US\$25,000 from a crowdfunding campaign (Grove, 2015). In 2016, it was granted formal NGO status by the Egyptian government. HarassMap does not strictly generate revenue but has gained international recognition and awards (HarassMap, 2014).

Governance. The interface’s governance refers to “how the app provider seeks to manage and regulate user activity to sustain their operating model and fulfil their vision” (Light et al., 2016, p. 890). The interface’s governance is manifested through rules and guidelines which inform and encourage users to abide to a particular code of conduct, and to an extent, to embody a particular ideal of a user (Light et al., 2016). This can be discerned from the formal Terms of Service (TOS) in which the organisation lays out the legal agreements which the user must abide by in order to access and use the service.

The TOS of HarassMap’s interface are rather brief and simplistic. It provides guidelines of what is considered acceptable and unacceptable behaviour, laying down specific circumstances

under which HarassMap will deny services to a particular user (e.g. provision of false information, disrespect towards other users, using the platform for commercial uses). Additionally, submitting a report requires users to agree to receiving emails from HarassMap and thereby agreeing to the Terms of Service (TOS). I elaborate on the above in the next section.

The *Technical Walkthrough*

The *technical walkthrough* of the interface will serve as the primary mode of inquiry. The method is conducted in three stages: registration and entry, everyday use and deregistration. I will present findings from each stage while elaborating on observations relevant to my research question, providing a basis for the second tier of the analysis.

Registration and Entry. HarassMap's reporting system is not strictly an app but a web-based interface. The map can be visualised on a mobile phone, laptop and other devices. Reports can be submitted via several means including the interface, Facebook, Twitter or SMS. Reporting does not require registration but registering allows users to comment or 'like' other reports. For registration, HarassMap requires the user's full name, email address, password and an agreement to the TOS. The reporting form is illustrated in Figure 3 below.

REPORT AN INCIDENT OF SEXUAL HARASSMENT

IT JUST HAPPENED HERE

IT HAPPENED EARLIER / ELSEWHERE

Address/Description

Date

Time

City/Town/Country

Timezone
Africa/Cairo

Description

Describe what happened...

Type of incident

<input type="checkbox"/> Facial Expressions	<input type="checkbox"/> Ogling	<input type="checkbox"/> Catcalls	<input type="checkbox"/> Comments
<input type="checkbox"/> Indecent Exposure	<input type="checkbox"/> Stalking or Following	<input type="checkbox"/> Touching	<input type="checkbox"/> Phone Calls
<input type="checkbox"/> Online	<input type="checkbox"/> Sexual Invites	<input type="checkbox"/> Sexual Photos	<input type="checkbox"/> Unwanted Attention
<input type="checkbox"/> Threat	<input type="checkbox"/> Mob Sexual Harassment	<input type="checkbox"/> Sexual Assault	<input type="checkbox"/> Rape
<input type="checkbox"/> Mob Sexual Assault/Rape			

Your role

My role was...

Did anyone intervene?

Yes/No

SUBMIT

CANCEL

Figure 3. Screenshot of reporting form from HarassMap. “Reporting”.(2010). Retrieved from harassmap.org

Everyday Use. Everyday use of an interface refers to the activities and functionalities in which users can engage after registering and/or accessing the platform (Light et al., 2016).

The *everyday use*, in the case of HarassMap, naturally differs from that of a platform designed for entertainment and/or everyday purposes. Nonetheless, I will navigate the interface and identify the affordances and constraints of the platform and thereby observe what is able to circulate and what is not.

When accessing the interface, the user is first presented with a view of the harassment map, visualising reports in forms of clusters – reports that are within a certain distance of one another are visually aggregated into a proportionally larger marker. The map represents all reports collected since 2010, with the majority coming from Egypt but a few dozen spread across

were still under review. It is not clear whether HarassMap has yet to review these reports or whether they were considered to not be conforming to the criteria.

The review process overall is rather ambiguous. In the TOS, HarassMap states:

Content. You acknowledge and agree that the content accessible through the Services is community-authored and -moderated, and that HarassMap assumes no liability for any content posted by users. HarassMap is a hosting service and may choose to moderate content to the extent of standardization of format and/or to preserve anonymity of all parties, but is not responsible for the completeness, accuracy, appropriateness, or decency of content posted on its Services. The views expressed by content authors are not necessarily the views of the website or its agents.

(HarassMap, 2010c, para. 3)

The excerpt above illustrates the ambiguity in the role which HarassMap has tailored for itself. As both a ‘hosting service’ and ‘moderator’, it does not have responsibility over the content but does nonetheless retain control over modification and standardisation of such information. The parameters within which HarassMap exercises its power as a moderator remain unclear. Even more ambiguous is how reports circulate within the interface. One cannot determine what counts as an ‘acceptable’ report and what does not. HarassMap, however, claims to regularly review reports to ensure they abide by the following:

The report is about sexual harassment and not harassment in general. It should also be about a specific incident and not a general statement about sexual harassment. The report also has to say where and when it happened, and what kind of sexual harassment it was.

(HarassMap, 2010b, para. 5)

Yet, a review of all reports from 2018 to 2020 revealed several reports which clearly did not meet the aforementioned criteria (see Figure 6).

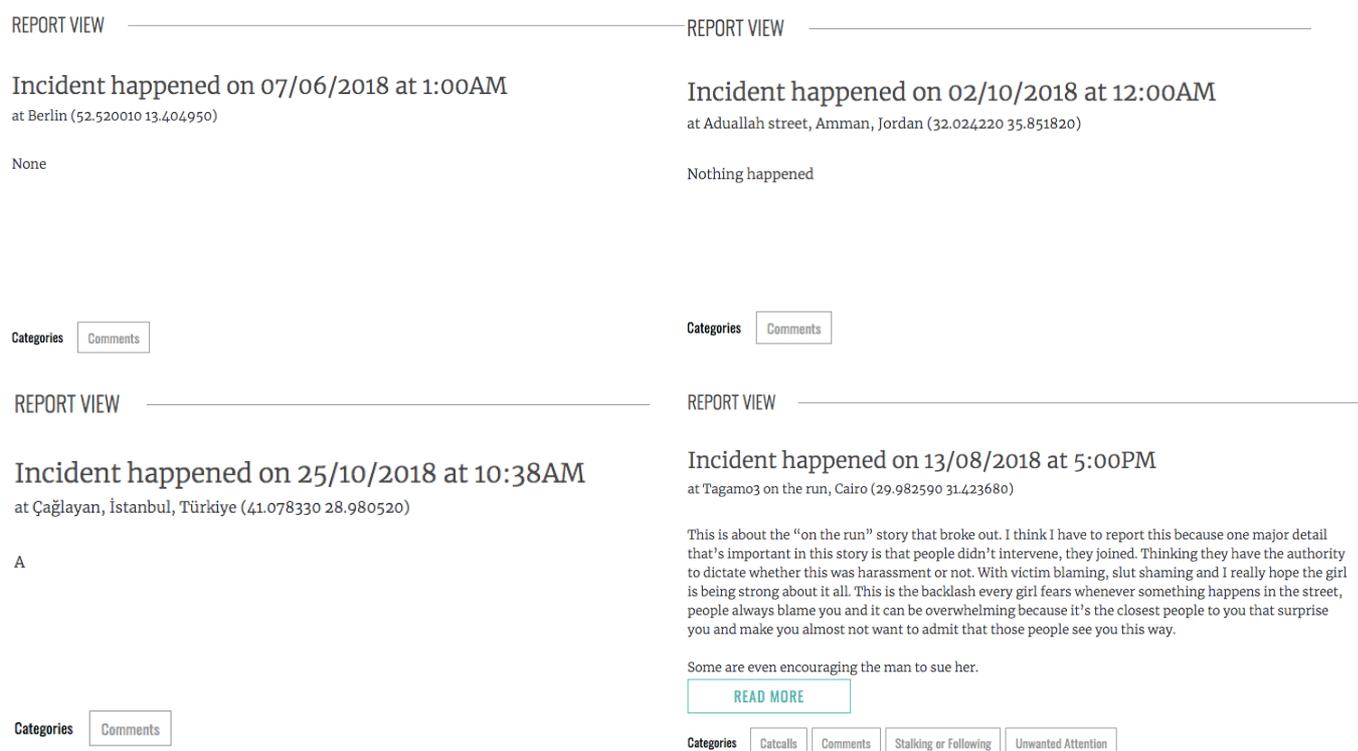


Figure 6. Screenshots of four reports from HarassMap."Reporting".(2010). Retrieved from harassmap.org

Such ambiguity is often observed in social media platforms and their role as content moderators (Gillespie, 2018). As platforms moderating user-generated content, such as HarassMap and social media platforms including Facebook, Twitter, YouTube and Instagram, make decisions about the kind of content which is able circulate and to whom, and which does not – playing a crucial role in how knowledge is produced and how it is perceived by the wider public. Nonetheless, such decisions and practices are often articulated in ambiguous terms which has resulted in public backlash and criticism for the lack of transparency (Gillespie, 2018).

HarassMap also claims to regularly review the map to identify ‘high-risk areas’, otherwise known as hotspots - areas where incidents are most prevalent. Interventions are subsequently deployed in such areas which aim to garner the support of street vendors and shopkeepers in supporting HarassMap and agreeing to stand against acts of sexual harassment. Volunteers use printouts of the map to convince the local community to help convey the pervasiveness of the issue. As Chiao states: “it’s so easy to zoom in... make a printout of the map and bring it to the people in the streets and show them, this is our neighbourhood’ (IDRC, 2013, 1:07:59). Vendors and shopkeepers are then asked to sign an agreement with HarassMap to provide ‘safe

spaces' for those subject to sexual harassment which are indicated by stickers placed on windows and entrances demonstrating their support (Rissman, 2014).

It is evident that HarassMap heavily relies on its interface's visual representation to capture the realities on the ground and deploy interventions on the basis of that. However, Chiao does argue for a degree of caution when using the map:

We also try to be very clear that crowdsourced data cannot be used to make claims about specific areas. Our reports are generated entirely by the public, not sampled as part of a scientific study. This means that people only send reports if they know about our service and if they feel like it. Such data can be used for many useful purposes but identifying areas of high harassment is not a valid use.

(Q&A with Ms. Rebecca Chiao, 2019)

While on one hand, the map is treated as the ultimate tool to capture “the reality and scope of sexual harassment and assault in Egypt” (HarassMap, 2010a, para. 2), HarassMap also seems to shy away from recognising its reliance on it.

HarassMap's discourse and framing of sexual harassment also renders visible the affordances of the interface which contribute to understanding the kinds of spaces it produces. I seek to illustrate this by analysing one of their campaigns.

In 2015, HarassMap launched a campaign titled *Harasser = Criminal* aimed at raising awareness of the legal repercussions against sexual harassment. In 2014, a law was introduced which recognised sexual harassment as a criminal act, punishable with up to five years in prison (HarassMap, 2010b). The campaign video thus focused on the criminality of the issue, with a supporting slogan stating “don't help him, help her” in Arabic as shown in Figure 7.

While the campaign highlights the gravity of any form of sexual harassment, it also embodies a strict binary. The very title of the campaign understands all harassers to be criminals and therefore punishable by law.



Figure 7. Harasser = Criminal campaign slogan. (2014.) Retrieved from <https://egyptindependent.com/harassmap-campaign-highlights-criminality-sexual-harassment/>

According to HarassMap’s annual report (2014), incidents of harassment were found to be highest amongst male respondents between the 18-24 age group. This aligns with Chiao’s claim in various interviews that harassment is largely observed amongst the youth, many being younger than 18 years old. Nevertheless, in the campaign video, the ‘harassers’ are played by a seemingly older demographic, depicting two men approximately in their late 20s and late 30s respectively.

With Orientalist tropes and stereotypes of the ‘predatory Arab man’ already plaguing academia and society as a whole, such depictions of the ‘harasser’ in a campaign video creates and reinforces a certain idea of what a harasser looks like (Amar, 2011a; Grove, 2015). Moreover, the emphasis on stronger law enforcement strengthens the assumption that Arab streets require policing and monitoring due to unchecked masculine aggression, exacerbating stereotypes that demonise the ‘Arab man’ (Amar, 2011a; Grove, 2015).

Although the securitisation of public spaces is intended to create ‘safer streets’ for women it also has serious implications for the Egyptian state. HarassMap distributes printouts of hotspots to local authorities, essentially providing them with specific areas to monitor. HarassMap’s collaborative efforts with security forces seemingly disregards two key considerations: the complicity of authorities both in tolerating and engaging in acts of sexual harassment and state-sponsored, politically motivated sexual violence (Amar, 2013). HarassMap is rather silent on what is arguably two crucial factors which characterise the issue of sexual harassment in Egypt. However, organisations such as HarassMap are also subject to restrictive laws which allow the government to terminate any organisation on the grounds that it “harms national security, public order, public morality, or public health.” (Najjar, 2017, para. 2). I assume, then, that speaking out against police brutality and state-sanctioned violence presents risks that HarassMap chooses not to take.

Yet, sexual harassment cannot be addressed in isolation from its socio-political context. This aligns with the notion that interfaces, too, engage in knowledge-production processes which are inevitably exclusionary practices, privileging forms of knowledge over others. Precisely because the above is unavoidable, it is imperative for HarassMap to be both reflexive and cautious about presenting an interface as an irrefutable depiction of reality (Grove, 2015).

Deregistration. As registration is not required to access and submit a report through HarassMap's reporting system, 'termination' simply entails ceasing to use the platform.

Analysis II: The Production of Securitised Spaces

In this section, I will contextualise and interpret the findings from the walkthrough in line with the theoretical framework of this thesis.

With the capacity of GIS mapping technologies, HarassMap's interface is able to produce a seemingly smooth and real-time cartographic representation of incidents of sexual harassment. It constructs a new aesthetic of space – space configured along territories of security, control and hypervisibility (Grove, 2015). It abstracts bodies and subjectivities of everyday life, *perceived space*, into calculated georeferenced targets, *conceived space*. It thus recalibrates space insofar that it takes spaces living at the intersections of gender, class, power and race, and reconstructs them into fixed and computed equivalents. Through this process of abstraction, Lefebvre (1974/1991) notes that the *conceived space* comes to dominate the *perceived space*. Similarly, the way HarassMap relates to space is not necessarily informed by the bodies on the line, or rather on the streets, but by an aggregation of their experiences that determine the deployment of interventions. Thus, it is no longer their bodies that are to be secured, instead neighbourhoods subject to targeting (Grove, 2015).

The translation of Cairo's urban landscape into safe and unsafe neighbourhoods allows for a kind of biopolitics and population management, subjecting spaces and groups to territorial stigmatisation (Wacquant, 2007). Here, marginalised spaces become 'penalised spaces' (Pétonnet, 1982), exposing whole communities to heightened scrutiny and vilifying discourses. As Wacquant describes in *Territorial Stigmatization in the Age of Advanced Marginality* (2007), territorial stigmatisation comes with a loss of 'place' – a space in which there is a sense of social familiarity and security for those living in it. The spatial stigmatisation resulting from HarassMap's configuration of space aggregates whole bodies and experiences, which Bourdieu describes in his work as follows:

the stigmatized neighbourhood symbolically degrades those who live in it and they degrade it symbolically in return, since, being deprived of all the assets necessary to participate in the various social games, their common lot consists only of their common excommunication. Assembling in one place a population homogeneous in its dispossession also has the effect of accentuating dispossession.

(Bourdieu (1993), quoted in Wacquant (2007), p. 129)

More importantly, space is experienced by different actors in fundamentally distinct ways. I illustrate how a particular space affects, and is experienced by, different groups depending on class, gender, and power, using the example of Tahrir Square.

Tahrir Square is considered the symbolic heart of the Egyptian revolution of 2011 and a space of public assembly (Gunning & Zvi 2015). Yet, it is also visualised on the interface as

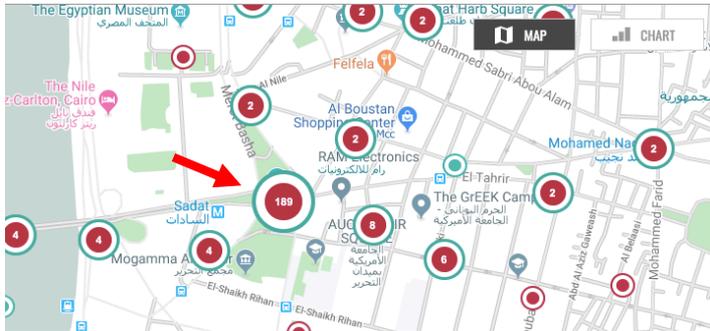


Figure 8. Screenshot of Tahrir Square from HarassMap. "The HarassMap Effect".(2010). Retrieved from harassmap.org

the largest harassment hotspot in Cairo (see Figure 8). Hence, it is a space that is highly scrutinised by both HarassMap's team and local authorities. The securitisation of this square enables Egyptian authorities' increased monitoring and scrutiny – specifically in preventing the

formation of mass protests harbouring anti-government and anti-military sentiment. It extends their power which has been shown to disproportionality affect working-class Arab youth and women (Amar, 2011a; Grove, 2015). As a result, the securitisation of the Square also results in depoliticisation. Being present in such a public space entails a kind of negotiation. For men, particularly of younger working-class status, the space is both a place of political expression but can also represent the risk of becoming a potential target. Whilst for women, the presence of security forces may serve as reassurance but can also mean becoming a target of police violence. Women activists, in particular, are disproportionately subject to arrest as they can be punished for posing 'threats to national security' (Wells, 2019).

What the above example seeks to demonstrate is how space is inextricably gendered and subject to power relations which are navigated and experienced differently by different actors. The case of Tahrir Square can be understood as an example of representational space – space that is *lived* – which is felt and experienced by inhabitants through complex symbols and images that ascribe meaning to places (Carp, 2008). Here we can see how *lived space* is unfixed and ever-changing, but more importantly it is inextricably dependent on, and at tension with, *conceived* and *perceived space*. In other words, the way in which HarassMap's interface reconfigures space (*conceived space*), extracted from actual occurrences of sexual harassment (*perceived space*), shapes how space is felt and embodied (*lived space*).

My reading of HarassMap, therefore, has focused on re/tracing the affordances of the interface to understand how its material mediation works to produce securitised spaces, beginning with the material practices that determine what is able to circulate within the

interface. Let us refer back to HarassMap's translation of bodies and experiences into georeferenced data points and consider the input, the output, and what gets lost in translation. What seems to remain from the input (the submitted report) is a series of visual pointers, marking traces of violence across the landscape. The output, however, is not able to capture the particularities – the space as it was *perceived*. The fact that when submitting a report, the user must indicate the form of harassment (following the categories provided) renders visible the workings of the interface in reconfiguring space into measurable units.

The space created by the interface in which to think and speak of sexual harassment works in a strict binary, oscillating between victim and perpetrator, with nothing in between. Alternative ways of considering and thinking about sexual harassment are thus not able to circulate within the platform. Hence, the visual representation, or otherwise the 'output', is a 'constructed abstraction' of selective conceptions of space, privileging certain forms of knowledge over others. Without negating the opportunities for the interface in bringing heightened awareness and the actual occurrences of harassment with which the platform engages, HarassMap should be cautious in treating the 'output' as an irrefutable reflection of what happens on the ground.

HarassMap's mapping and targeting campaign approaches the issue of sexual harassment in Egypt volumetrically without sufficiently addressing its social, political and legal implications. As an initiative with power and agency, it is crucial for the organisation to consider how its intentions are materialised through the interface. HarassMap's co-founder Chiao states that herself and the HarassMap team are not academics, which I assume refers to focusing efforts and resources toward on-the-ground activism, rather than in critically reflecting on the above. Yet, it is precisely because one cannot separate an issue from its intersectionality that if one is to talk about space, one is also inevitably talking about issues of class, race, gender and power which cannot be disentangled from one another (Grove, 2015; McLafferty, 2002).

Conclusion

HarassMap presents a unique and important case for exploring the interrelation between space, technology and the body. Behind HarassMap's smooth and calibrated cartographic visualisation lies an abstraction of bodies seamlessly reconfigured into calculable georeferenced targets – producing new kinds of spaces demarcated along lines of security, control and hypervisibility. Such representations give the impression of totalising and

penetrable spaces, capturing everyday life and made readily available in the palm of your hands (Grove, 2015).

My reading of HarassMap has sought to render visible the material traces of its interface that engage in a process of targeting and categorisation that precariously reconfigures Cairo's urban landscape into 'safe' and 'unsafe' neighbourhoods. By aggregating markers of sexual harassment to determine hotspots, HarassMap translates bodies, streets, neighbourhoods and entire communities into targets of intervention (Grove, 2015).

Reliance on technological solutions is proliferating amongst humanitarian initiatives and advocacy groups that are increasingly drawn to the accuracy, precision, and bird's-eye view of 'everything from nowhere' that these technologies can offer (Burns, 2014; Elwood & Leszczynski, 2018; Haraway, 1988; Kwan, 2002). The international 'success' of HarassMap points to a growing trend of feminist campaigns built on universalistic, 'objective' criteria meant to raise women up globally in areas such as health, safety and entrepreneurship. In particular, campaigns combatting gendered sexual violence are often predicated on tools and discourses favouring policing and surveillance (Amar, 2013; Grove, 2015; McLafferty, 2002).

Important discussions about the objectification of a vertical vision voiced by feminist GIS scholars have shown how conceptions of space cannot be divorced from issues of gender (Elwood, 2006a; Elwood & Leszczynski, 2018; Kwan, 2002; Massey, 1994; Pavlovskaya & Martin, 2007; Schuurman & Pratt, 2002). More importantly, they have laid the ground for a wider discussion about how space is inextricably gendered, racialised and subject to power relations which affect those living in it in deeply asymmetrical ways. How, then, can a technology capture the above when it operates on the idea that gendered sexual violence can be tackled through universal gender norms?

What my reading of HarassMap shows is that rather than a merely technical tool, its interface operates as a techno-political infrastructure – with agency to bring about particular configurations of social life and spaces (Elwood, 2006b; Grove, 2015; McLafferty, 2002). This thesis' main inquiry into understanding how HarassMap's particular configuration of space is produced is grounded in Lefebvre's (1974/1991) conceptual spatial triad. In re/tracing the material arrangements of the interface, I rendered visible the ways in which HarassMap's interface abstracts occurrences of sexual harassment, *perceived space*, to reconstruct them into georeferenced markers that visualise space into a rational and ordered spatial manner, *conceived space* - thus, becoming a 'space of calculations rather than of subjects' (1974/1991, p. 362). The dominance of the *conceived space* over the *perceived space*, then, results in the harassment map being used as a tool to determine which neighbourhoods might become subject

to securitisation. This in turn, shapes how space is felt and embodied by those living in it, *lived space*.

Lefebvre's triadic conceptualisation has guided my reading of HarassMap in uncovering the interrelations between space, technology and the body – “[space] commands bodies and determines ways of doing, thinking and feeling (and vice versa) [...] it has a body politics” (van den Akker, 2018, p. 24). This also extends to a broader reflection on the issue of governmentality. HarassMap's project in tackling sexual harassment in Cairo raises important questions about security governance and biopolitics – allowing governments, both liberal-democratic and authoritarian, to control bodies and space (Amar, 2011b, 2013; Grove, 2015).

HarassMap's configuration of Cairo's urban landscape has profound implications for the way people relate to public spaces and what can and cannot circulate within these territories. Lefebvre (1968/1996) and Harvey (1973) both reflect on the idea of the ‘right to the city’ which, simply put, is a collective reclamation of the city where the people are not merely inhabitants but are active participants in the re/making of the urban fabric. As Harvey notes “the question of what kind of city we want cannot be divorced from that of what kind of social ties, relationship to nature, lifestyles, technologies and aesthetic values we desire” (Harvey, 2008, p. 23).

But with digital technologies redefining our everyday life and spaces, the ‘right to the city’ is now increasingly discussed in the face of our current digital realities – a digital right to the city. Shaw and Graham (2017) reflect in *Our Digital Rights to the City* on the idea of abstract space as follows:

We believe that dominant abstract space has the power to reproduce and change our material reality. If you accept this premise, then we need to ask important questions about what rights citizens have to not just public and private spaces, but also their digital equivalents. How do we disagree with these representations? [...] If we aren't happy, then what are the alternatives?

(Shaw & Graham, 2017, p. 4-5)

Their proposition is particularly relevant to this thesis precisely because it highlights the agency of interfaces, such as that of HarassMap, in reproducing and changing material reality by means of abstract conceptions of space. What this thesis has tried to demonstrate is that interfaces, and digital technologies more generally, are far from purely technical tools.

Understood as infrastructures instead, we can uncover the power relations at play and consider the asymmetries therein.

HarassMap's efforts in its fight against sexual harassment in Cairo is certainly laudable and provides victims of such violence with a platform to speak out. Yet, an opportunity should be taken to reflect on alternative ways of considering and tackling sexual harassment which currently are not able to circulate within its present framework. And whilst any sort of classification or categorisation will always imply an exclusionary practice, it is imperative to not detach an issue from its intersectionality. Creating spaces free of sexual harassment, thus, must also come from actively engaging in issues of class, race, gender and power.

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Appendix A

David Harvey's matrix of possible meanings for space as a keyword

Table 1. "A matrix of possible meanings for space as a keyword". Harvey, D. (2006). *Space as a Keyword*. In N. Castree & D. Gregory (Eds.), *David Harvey: A Critical Reader* (pp. 70–93).

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	Material space (experienced space)	Representations of space (conceptualized space)	Spaces of representation (lived space)
Absolute space	Walls, bridges, doors, stairways, floors, ceilings, streets, buildings, cities, mountains, continents, bodies of water, territorial markers, physical boundaries and barriers, gated communities . . .	Cadastral and administrative maps; Euclidan geometry; landscape description; metaphors of confinement, open space, location, placement and positionality; (command and control relatively easy) – <i>Newton and Descartes</i>	Feelings of contentment around the hearth; sense of security or incarceration from enclosure; sense of power from ownership, command and domination over space; fear of others 'beyond the pale'
Relative space (time)	Circulation and flows of energy, water, air, commodities, peoples, information, money, capital; accelerations and diminutions in the friction of distance	Thematic and topological maps (e.g. London tube system); non-Euclidean geometries and topology; perspectival drawings; metaphors of situated knowledges, of motion, mobility, displacement, acceleration, time-space compression and distanciation; (command and control difficult requiring sophisticated techniques) – <i>Einstein and Riemann</i>	Anxiety at not getting to class on time; thrill of moving into the unknown; frustration in a traffic jam; tensions or exhilarations of time-space compression, of speed, of motion
Absolute space (time)	Electromagnetic energy flows and fields; social relations; rental and economic potential surfaces; pollution concentrations; energy potentials; sounds, odours and sensations wafted on the breeze	Surrealism; existentialism; psycho-geographies; cyberspace; metaphors of internalization of forces and powers (command and control extremely difficult – chaos theory, dialectics, internal relations, quantum mathematics) – <i>Leibniz, Whitehead, Deleuze, Benjamin</i>	Visions, fantasies, desires, frustrations, memories, dreams, phantasms, psychic states (e.g. agoraphobia, vertigo, claustrophobia)

Appendix B

Checklist Ethical and Privacy Aspects of Research

PART I: General Information

Project title: EUR Staff project (thesis project offered by the Sociology staff)

Name, email of student: Nina Wang, 426539nw@eur.nl

Name, email of supervisor: prof. dr. Willem Schinkel, schinkel@essb.eur.nl

Start date and duration: 1 April 2020 – 21 June 2020

Is the research study conducted within DPAS YES

If 'NO': at or for what institute or organization will the study be conducted?
(e.g. internship organization)

PART II: Type of Research Study

Please indicate the type of research study by circling the appropriate answer:

1. Research involving human participants. NO
If 'YES': does the study involve medical or physical research?
Research that falls under the Medical Research Involving Human Subjects Act ([WMO](#)) must first be submitted to [an accredited medical research ethics committee](#) or the Central Committee on Research Involving Human Subjects ([CCMO](#)).
2. Field observations without manipulations that will not involve identification of participants NO
3. Research involving completely anonymous data files (secondary data that has been anonymized by someone else). NO

P IV: Data Storage and Backup

Where and when will you store your data in the short term, after acquisition?

My research will not involve human participants and/or field data. As such, I expect all my research to take place digitally and therefore will take the necessary precautions to store my data safely by doing regular (weekly) encrypted back-ups on external storage devices which will be encrypted as well. If I will need to store the data on a cloud, I will use the EUR-approved storage options, such as SURFdrive

Note: indicate for separate data sources, for instance for paper-and pencil test data, and for digital data files.

Who is responsible for the immediate day-to-day management, storage and backup of the data arising from your research?

The researcher, myself.

How (frequently) will you back-up your research data for short-term data security?

Weekly.

In case of collecting personal data how will you anonymize the data?

My research will not include the collection of personal data. However in the case of it, I shall anonymise data by removing the identifiable information of the participant (e.g. name can be replaced by a key/code). The anonymisation codes/keys will be kept separate from the list of respondents.

Note: It is advisable to keep directly identifying personal details separated from the rest of the data. Personal details are then replaced by a key/ code. Only the code is part of the database with data and the list of respondents/research subjects is kept separate.

PART VI: Signature

Please note that it is your responsibility to follow the ethical guidelines in the conduct of your study. This includes providing information to participants about the study and ensuring confidentiality in storage and use of personal data. Treat participants respectfully, be on time at appointments, call participants when they have signed up for your study and fulfil promises made to participants.

Furthermore, it is your responsibility that data are authentic, of high quality and properly stored. The principle is always that the supervisor (or strictly speaking the Erasmus University Rotterdam) remains owner of the data, and that the student should therefore hand over all data to the supervisor.

Hereby I declare that the study will be conducted in accordance with the ethical guidelines of the Department of Public Administration and Sociology at Erasmus University Rotterdam. I have answered the questions truthfully.

Name student: Nina Wang

Name (EUR) supervisor: prof. dr. Willem Schinkel

Date: 22 March 2020

Date: 22 March 2020

