

Toward an Aesthetics by Algorithms

Palestinian Cyber and Digital Spaces at the Threshold of (In)visibility

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Abstract

This chapter explores how algorithms produce aesthetic forms and dystopian configurations across Palestinian cyber and digital spaces. Through surveillance and erasure, algorithms operate as infrastructures of (in)visibility on social media, digital maps, navigation apps, and augmented reality video-games. On the one hand, they serve the Israeli system of control by making Palestinian users and contents hyper-visible to surveillance. On the other, by imposing (self-)censorship and erasure from digital representations, they ultimately purport to delete Palestine from cyber spaces. Acting at the threshold of the (in)visible, algorithms do not only enact control and surveillance, but they also inform the creation of an aesthetics of disappearance. In this light, this chapter problematizes the normative assumption equating invisibility – in the form of masking or disconnection – to freedom and emancipation by introducing the concept of aesthetics by algorithms as new canon and form of ordering of the colonial space.

Introduction

In October 2017, the Israeli police arrested a Palestinian carpenter who posted online a selfie taken while working in a construction site in the illegal Jewish settlement of Beitar Ilit, near Jerusalem. The picture portrayed the man posing in front of a bulldozer and was accompanied by the caption 'Good Morning' in Arabic. Facebook's automated service mistakenly translated the man's message into 'attack them' in Hebrew, and 'hurt them' in English. Besides the wrong translation, Israeli algorithms ignited the security procedure also because they detected a bulldozer, which have in the past been used for hit-and-run attacks. Once notified of the post, the Judea and Samaria District police proceeded to the arrest, as no Arab-speaking officer had been involved in the operation and could promptly detect the fallacious translation.

Besides revealing the extent of algorithmic interference in Palestinian life, this anecdote reveals how algorithms are trained to learn, codify, manipulate and make visible human behaviors, as well as tendencies, with the aim of transforming them into informed and targeted strategies of control. A common line of critique pointing at algorithmic surveillance is that these have made individuals hyper-visible to the eye of sovereign, and thus convey to invisibility – in the form of anonymity, 'masking', or even disconnection – a transformative and empowering potential.

This chapter expands the debate on visibility and algorithmic surveillance by addressing the question of colonial erasure and algorithmic power in the context of Israel/Palestine. It does so by drawing inspiration from Sari Hanafi's definition of the erasure of Palestinian national space during and following the 1948 Nakba as spacio-cide. According to Hanafi, spacio-cide is not only a matter of seizure, control, or division of the Palestinian space per se, but of its abolition. Accordingly, we argue that algorithms operate in occupied Palestine as tools of government that create an infrastructure of concealment, making the cyberspace as an additional layer of spacio-cide. By keeping the analysis within the aesthetic realm, we consider those liminal spaces generated by digital experiences where the threshold between visibility and invisibility gets thinner, and impacts the visibility of Palestinian cyber and digital spaces.

By addressing how algorithms and software contribute to make Palestinian digital spaces (in)visible, our analysis concentrates on the way this happens through the production of images and visual representations of space. Along these lines, this chapter argues that algorithms do not only last as ultimate expressions of colonial power through control and surveillance, but contribute to shape its very aesthetics. By acting as agents of order of

Palestinian life, they give further configurations to its erasure from both real and digital worlds. At the threshold of visibility, algorithms thus inform an aesthetics of appearance and disappearance, that operates by increasing Palestinian's visibility to the sovereign, while decreasing it from cyberspace.

Algorithms as infrastructures of the (in)visible

(In)visibility traditionally connects to the global history of infrastructure, and its relation with power and the sovereign. In the history of the modern state formation, for example, such relation has always been central to strategies of population management, and to the ways technologies could make citizens and subjects more visible, legible, and hence predictable. Overall, from the railways to communications and information technology, infrastructural power always stood as a symbol of the human desire to make the world visible. In that sense, Orit Halpern suggests that the realm of the visible cannot be reduced to the sole sphere of the sensible, but it needs to be understood as an operation: the 'visible' constitutes in fact 'an assemblage of relationships, enunciations, epistemologies, and properties that render agents into objects of intervention for power.'ⁱ

In this framework, today's communication and information technologies continue bringing radical changes to the ways people are made 'visible', as learning machines, algorithms and software can shape, intercept, and even manipulate, social and political orders across the globe.ⁱⁱ These are designed to accumulate large amounts of data that, once processed through mathematical calculation and averaging, synthesize human behaviors and patterns into aggregated and workable coordinates.ⁱⁱⁱ Precisely, this algorithmic modeling then rationalizes the collected data by producing an abstract and partial ordering of reality, producing systems of government that, in the long run, value and shape individuals' realities and consequently social order by increasing individualization, de-territorialization, while decreasing transparency and accountability.^{iv}

As different algorithmic models cross-integrate their data to produce individual or collective user profiles, they purports to reduce disordered and messy, yet plural, human experiences into a homogenous and systematized 'algorithmic life.'^v Through mathematical ordering, in fact, algorithms operate on 'what has been done' but also towards unknown futures: as much as individual habits and inclinations crystallize into averaged mass ones, they create the possibility to track and influence historical futures and human actions. As a consequence of the 'datafication' of most facets of human experience, algorithms have become autonomous actors of power. In the sphere of social media, for instance, this has created a problematic imbalance between humans and

machines: users' inability to decipher how algorithms work, and when/whether these are at work.

Due to their increasing complexity - in adaptability, automatic functions, and extent of analyzed data - algorithms become increasingly undetectable and invisible to users. In contrast, this very sophistication makes users' behaviors, experiences, and inclinations inescapable to the sight of machines. Users unconsciously participate to algorithmic-based operations by feeding data to the machine, and hence becoming 'willing' targets of the algorithm. Such relationality in fact exists as the interactive production of machines' knowledge through encounters with human inputs. In such a way, users embed their experiences into circular models of algorithmic design^{vi}. In this scenario, the illusion for users to decide freely, somehow strengthen the functioning of algorithmic-based power and ordering. Overall, by targeting the 'as-yet-unknown', algorithms and software dig deeply into an underground world and, simultaneously selecting and singling out human inclinations, they operate at the threshold of the visible, the known, and the possible.

In this chapter we argue that such apparatus of producing evidence and ordering, if applied to the settler colonial context of Israel/Palestine, offers a further degree of analysis to understand that the relation between infrastructural power and invisibility is not limited to the question of control and government through 'making visible', but it expands to the question of colonial erasure. With the Nakba and the

foundation of the state of Israel in 1948, 750.000 Palestinian refugees lost their homes and lands, while over 600 villages had been destroyed. Since then, the Israeli state has progressively implemented segregation and the systematic erasure (physical, social, political and cultural) of Palestinians from their land. From the 1967 war, and the military occupation of the West Bank and the Golan Heights, through the First Intifada and the Oslo Accords in 1993, to the construction of the separation wall and the siege of the Gaza strip across the 2000s, Israel has created a complex spatial and infrastructural grid made of refugee camps, borders, barriers, network of roads, checkpoints, military outposts and settlements that disarticulate, dispossess, occupy, and destroy the Palestinian living space. These are the elements that enforces Israel's settler colonial project and the invisibility of Palestinians.

In this context, we explore the ways algorithmic infrastructures set an additional layer of Israel system of power: juxtaposing to the physical world, cyber and digital spaces serve as the ultimate milieu where Palestinian life is forced into invisibility. Interestingly, this manifests in a twofold direction. On one hand, as the Israeli system of control, policing, and rhetoric of 'hunting terrorists' demands the hypervisibility of its targets, it also corresponds to the forced disappearance of resistant Palestinian usership from cyberspace through punishment or as a form of self-censorship to escape surveillance. On the other, symbols of the colonial apparatus and its dispossession (such as refugee camps, seams, and borders) are erased from digital maps and spatial representations, further stretching the

history of the Nakba and its spacio-cide to cyber and digital spaces.^{vii}

The hyper-visible of algorithmic surveillance

As an infrastructure of visibility and control, surveillance represents a traditional feature of modern state formation.^{viii} Through algorithmic automation, strategies of control have further accelerated the transition towards what Gilles Deleuze defined, already in 1992, as the ‘society of control’^{ix}. Scholarship on surveillance overall agrees that the so-called ‘dataveillance’^x marked a discontinuity with the past by leveling the ‘hierarchies of visibility, with all individuals subject to the eye of the machine regardless of their social status, race, gender, etc. At times where even the sovereign falls under the spotlight of surveillance, going invisible – through anonymity or disconnection – represents thus the ultimate resort to protect one’s privacy.^{xi}

This acceleration is visible in Palestine more than anywhere else. If making Palestinian life hyper-visible through invasive surveillance dates back, and even precedes, the foundation of the State of Israel,^{xii} algorithmic surveillance enhanced this system of control and marked the final stage where Palestinian reality turns into a dystopia. Above all, the pervasiveness of the

Israeli system of control depends on the total control on the infrastructure. In contravention of Oslo I (1993), that set forth a progressive transition of the ICT governance to the PA, internet backbone and service delivery infrastructures currently remain under full Israeli control for the entire territory - East Jerusalem, West Bank, and the Gaza Strip^{xiii}. In addition, Israeli system of control - including national agencies, ISPs, algorithms, software, and even the Palestinian Authority (PA)^{xiv}- polices the visibility of Palestinians' contents. Before anything else, Israel's government of the (in)visible operates through service access denial, hence hindering the possibility for many Palestinians to even produce visual contents.

Besides being an effect of the violation of the Palestinian right to internet access, censorship primarily occurs through Israeli policing of contents, primarily justified on security grounds^{xv}. In the logic of predictive policing, which grounds its operationality on intelligence knowledge and predictions, Israeli authorities developed algorithms and software specifically tasked with the scanning of Palestinian online activities. As These algorithms lack transparency and are thus not available for scrutiny.^{xvi} Investigative research and media reports point however to some of their features. Israeli algorithmic surveillance scans social media contents - texts (statuses, notes, comments), videos, and images - in search for data constituting an 'incitement to violence'. Filtering a number of coded Arabic words - such as 'martyr', 'Al-Aqsa', 'jihad', 'knife' and more - algorithms collect and combine data about individuals in order to predict their propensity to commit a violent crime (as in the

case of the above-mentioned bulldozer selfie). This dystopian functioning led to the arrest of more than five hundred Palestinians since 2017.^{xvii}

In 2015, Palestinian poet Dareen Tatour wrote and published the poem 'Resist my people, resist them' (Qawem Ya Shaabi Qawemahum). Shared on her Facebook profile page - as well as through a YouTube video combining the poem text with short video-cuts of Palestinians clashing with the IDF in the West Bank - the poem was flagged by Special Units of the IDF. Tatour's house was stormed by the Israeli police, she was arrested and charged with incitement to violence and terrorism against the State of Israel. She was imprisoned for 97 days, before she was released on house arrest in January 2016. In 2019, after three and half years of persecutions, the district court in Nazareth accepted her appeal and acquitted her from all the charges related to the publication of the poem. Clearly, her initial punishment was commensurate to her decision – as happens to many Palestinians - to make her voice visible, denouncing the violence and injustice of the Israeli oppression. Like her, many other men and women have been detained because of contents shared on social media or instant messaging apps, that was indiscriminately flagged as 'dangerous imminent threat'. Palestinian human and digital rights organizations (such as 7amleh and the Palestinian Centre for Human Rights) have been reporting how Israeli algorithms filter contents – such as journal articles, and political statements – that criticize Israeli occupation without any direct reference to violence^{xviii}. There, algorithms work as online

checkpoints, filtering contents and reporting them to authorities in the event these are perceived as worth of attention.

The notorious 1956 sci-fi story of Philip K. Dick, *The Minority Report* seems having entered the real world of Palestine, or vice versa. Imagining a dystopian future that warns of the risk of dangerous liaison between political power and digital authoritarianism, Dick tells the story of a special division of the police called Precrime that arrest suspects before they can commit any actual crimes. As if we were trapped in the imagination of a sci-fi novelist, algorithms are designed to make contents and identities visible to the sovereign. Being visible online comes with greater risks for Palestinians. Cyberspace can quickly turn into an unsafe space, that strangely mimics the prison space: prisoner in fact cannot speak, write, and share. Not surprisingly, digital rights activists and dissidents in Palestine more and more imitating the techniques that political prisoners use with encoded messages to communicate internally and externally to the prison - to stay visible, to exist.

Furthermore, with Israeli algorithms set on a high-level guard, too often Palestinians are pushed into self-censorship – to disconnect - this way contributing to the representation of a digital space polished off their presence. Too often, however, disconnecting is not enough for protection. In order to profile users, algorithmic surveillance feeds on data of different nature and sourcing/confidentiality. In 2014, for instance, forty-three agents of the Israeli intelligence (part of the elite Unit 8200)

undisclosed evidence revealing the Unit's reliance on invasive hacking software to acquire private data of Palestinian users^{xix}. Targeting and blackmailing particularly vulnerable categories - such as women or LGBT people - the Unit trades the secrecy of their personal data in exchange for information of relevance for the intelligence, in a sort of state-sponsored phishing. In this sense, the aesthetic intervention does not only remove Palestinian contents, but intimidate most vulnerable categories pushing them into self-censorship and disappearance.

The Palestinian case reminds us of how algorithms are not just repressive in the way they intercept and censor (or lead to self-censorship). In the context of social media, they influence likeability or, on the contrary, they can function as vectors of hate and discrimination. At the same time, as proven by the case of Dareen Tatour, the technique of making Palestinians hyper-visible on the internet has revealed to be a double-edge sword for the state of Israel. In denunciation of Tatour's case, the Israeli minister of culture Miri Regev re-posted Tatour's poem in order to expose her publicly to the web. Regev meant to stir hatred, and make her a target, but interestingly, this had somehow an opposite effect, as it only led to the poem gaining more notoriety and popularity, creating the basis for new transnational networks of solidarity for Dareen. By doing so, this visibility put the Israeli state under the spotlight, stirring the attention around other similar cases in the world where freedoms of artists and poets are under attack.^{xx}

Interlude - Towards an aesthetics by algorithms

Unravelling tensions and fluctuations between visible and invisible raises questions that, going beyond surveillance and coloniality, relate to representation and political aesthetics. By operating at the limit of the visible, algorithms set the ground for an aesthetics of (in)visibility. Through the systematization of this visible, we argue that their systemic ordering subtends an aesthetic 'of the limit', that we here define an aesthetics by algorithms.

Programmers have since long tried to define and capture the 'beauty' of algorithms in aesthetic canons. terms of compactness, eloquence, and 'cleanness', as these aesthetics qualities are deemed to be crucial for the ordering and problem-solving functions of algorithms^{xxi}. Art theory and criticism has similarly explored the relationship between algorithms and aesthetics in order to formalize systems and viewpoints^{xxii}. This chapter shifts perspective from the orderly qualities of algorithms to the aesthetics ordering performed by algorithms in Palestinian digital spaces. In Israel/Palestine an aesthetics by algorithms is set by making Palestinians hyper-visible targets of surveillance and control.

As proven by the techniques implemented online by activists and dissidents, also the resistance against oppressive algorithmic power, belongs to the sphere of (in)visibility. Activists therefore adopt themselves invisibility, as the only mean to escape repression and be safe. Hence, both state data visualizations and dissident speech and practice engages with

those representational elements that define an aesthetics by algorithms. Overall, it becomes clear how the epistemic function of algorithms determines generally an understanding of reality that reflects how knowledge opaquely can mutate into operationalizable outputs. In this light, to speak of an aesthetics by algorithms implies to speak of an aesthetics of opacity, where both power and counter-powers are deeply immersed.

In this sense, opacity is indeed the foundational principle. This furthermore develops and expands on multiple levels, by determining various conventions and canons. Here we list a series of principles that in our view set the foundational aspects of the aesthetics by algorithms: 1) algorithms and software act at the threshold of (in)visibility; 2) in so doing, their growing autonomy corresponds to a lower degree of detectability; 3) the opacity of mechanic and interactive learning serves and perpetrates the bias and partiality of sovereign power; 3) while operating as agents of order, classification, and prediction, algorithms validate decentralization in power structures, moving at the edges of transparency.^{xxiii} Entangled in algorithms' inner tension between opacity and ordering, algorithms and software can emerge as semi-independent actors^{xxiv}; 4) They interchangeably make visible or invisible their targets of subjects of interest.

Around those principles we argue that it is possible to theorize the basis of an aesthetics by algorithms as an order of the (in)visible. There, designers, lawmakers, military, algorithms,

self-learning algorithms, users and dissidents (and many other actors) play – more or less directly – a crucial role. Grounded on such vast network of actors, an aesthetics by algorithms serves an important epistemic function: by operating at the intersection between digital and real worlds it explains the relation between aesthetics and politics. In line with the thought of Jacques Rancière ^{xxv}, the aesthetics by algorithms does not correspond to the aestheticization of politics^{xxvi}. Instead, it constitutes canons or a ‘system of a priori forms’ that determines a ‘delimitation of spaces and times, of the visible and the invisible, of speech and noise, that simultaneously determines the place and the stakes of politics as a form of experience’^{xxvii}. In this sense, it pertains to the very foundation of politics, and as Rancière explains, as something that equally and necessarily ‘revolves around what is seen and what can be said about it, around who has the ability to see and the talent to speak, around the properties of spaces and the possibilities of time.’^{xxviii}

The invisible of colonial algorithms

Whereas Israeli algorithmic surveillance primarily operates by making Palestinians hyper-visible, the ultimate goal of this colonial system of control is annihilation, deletion, and disappearance. With social media platforms emerging as most important spatial containers of individuals’ visual contents - texts, audios, videos, and more - their absence, removal, or

disappearance also pertain to the visual representation of these spaces and to the aesthetic experiences conveyed. From this perspective, Israel's strategy of governing the visible encompasses the policing and censorship of contents on social media platforms. Therefore, Israel's attempt of making Palestinians visible and legible online, is a way to make them vulnerable. By juxtaposing the digital to the physical space, algorithmic power in fact epitomizes a very typical colonial paradox: the colonized is simultaneously 'annihilated' and 'preserved', as he/she is instrumental to keep intact the social, economic and racial hierarchy imposed by colonizers and settlers.^{xxix}

In addition to online policing and censoring through dataveillance (and the reaction/resistance to it), another foundational aspect of an aesthetic by algorithms is grounded on data visualization. As Wendy Chun has explained, algorithms are designed to make the complexities of the global world mappable, transforming 'time-based interactions and intervals' into spatial networks and visual representations.^{xxx} In this sense, these representational pursuits create an 'illustration' that conflates the local and global dimensions through the reduction of the world into digital nodes and edges. These representational elements provide us with the possibility to think of an aesthetics by algorithms in terms of 'maps' or 'atlases' of such networks, where the visual and aesthetic components of algorithmic power are multiple and polymorphous.

In their book *Objectivity*, Lorraine Daston and Peter Galison (2007) highlight how those XVI century atlases of science, geography, anatomy, or astronomy, were designed to map the territory of the power they served. Similarly, algorithms embody a dictionary of the science of the visible, whose masters learn to 'see' the world in new ways. More than those atlases, big data offer a broader dimension to the bird-eye culture where 'seeing from the air' interconnects to horizontality, allowing for a better comprehension/capture of the world constitutive objects. There, the space of play of algorithms illustrates nodes and edges that do not simply create a network, but make politics, where things, people, or experiences are deliberately made visible or invisible, non-existent and despised. The visualization aspect, constitute indeed another milestone of an aesthetics by algorithms. According to Halpern, in fact, 'visualization came to define bringing that which is not already present into sight': visualizations, according to current definition, make new relationships appear and produce new objects and spaces for action and speculation"^{xxxi}. Specific to the context of Israel/Palestine, it is important to note that 'map-making practices were always entangled with contradictory spatial identities and imbalanced power resources.^{xxxii}

In that sense, making the Palestinian (in)visible was not only a question of ordering and control, but also one of legitimization of the Zionist project and state formation. As outlined at the beginning of this chapter, since 1948 and the Nakba (which starts with the expulsion of Palestinian from their lands and the

erasure of more of 600 villages), Israeli power has been systematically entangled to mapping as a form of spacio-cide.^{xxxiii} After 1967, Israel made the occupation increasingly invisible, trying to normalize its sovereignty in East Jerusalem, the West Bank, and Gaza.^{xxxiv} This strategy of erasure concerns different domains and practices, such as cartographic renaming, removal, and place-making. While the West Bank became 'Judea and Samaria' on Israeli official maps (thus drawing a connection between the state of Israel and biblical times), the Green Line (1967 armistice line) progressively disappeared from visual representations in a way that 'reify[ed] the erasure of borders (...) between Israel's territory and the regions it had captured'.^{xxxv}

Between 1967 and the First Intifada (1987–1993), the Israeli government favored illegal settlements construction, as it 'served, among other things, to erase the Green Line in the [settlers'] own minds as well as in the minds of the citizens within Israel' (Ib.). Questions of borders reappeared in Israeli public discourse in the aftermath of the Second Intifada (2000–2005) in times when the construction of the separation wall - 85% of which runs east of the Green Line in Palestinian territory - and digital mapping developed contiguously. Despite a number of exceptions^{xxxvi}, the digitalization of maps occurred in line with the Israeli cartographic tradition of keeping the Green Line and many spatial products of the occupation (the separation wall, refugee camps, checkpoints etc.) invisible.

Alongside the opening of mapping to a wider usership, algorithms and software failed to put existing power structures into question through a disruptive aesthetic intervention. Rather, as shown in this chapter, they continue to retrace and amplify its patterns and logics. Since the earliest stages of its implementation, Google Maps (GM) has generated a number of controversies regarding its (non) representation of the physical and political realities of Palestine. At a first glance, the absence on GM of any of the conventional nomenclatures (Palestine, State of Palestine, Palestinian Territory, etc.). immediately signals erasure.^{xxxvii} Besides sparking protests, this 'forgetfulness' led to the 2013 DNS hack conducted by five Palestinian hackers who re-directed Google's Palestinian homepage (www.google.ps) to a site displaying a correct version of the map. Protests furthered in 2016 when the labels West Bank and Gaza Strip suddenly disappeared on GM. Regarding this incident, a Google's spokeswoman swiftly attributed the removal to a bug in the software's algorithm, hence putting the lack of accountability and opacity of the algorithms to an instrumental end. Zooming in the map, another act of erasure reveals: several Palestinian villages in the Area C of the West Bank, as well as Naqab desert non-recognized Bedouin villages, are absent. At the same time, GM reports in full detail the network of illegal Israeli settlements in East Jerusalem and the West Bank, hence normalizing their presence also in digital representations.

With regards to digital representations of Palestinian spaces, augmented reality (AR) video-gaming corroborates the

argument presented in this chapter. As soon as Pokémon Go was released available in Israel/Palestine, it became immediately clear how the images of the game embodied the detachment between real and virtual in its spatial representation.^{xxxviii} The application of augmented reality (AR) technologies to gaming purports in fact to create playable experiences at the intersection of real and virtual worlds. Adding a virtual layer onto the actual world enables experiences that exceed the boundaries of both worlds through the creation of hyper-realities. But the integration of different worlds becomes problematic when spaces, politics, and histories are assembled and reproduced in rarified ways, in contrast to the complexities on the ground. In a context like Palestine, overlaying a virtual world over a divided space can lead to further contestation.

In line with the tradition of those maps and cartography keeping the Green Line invisible from Israel's visual representations, the AR map not only erases the Green Line, but it also makes spatial and symbolic products of colonial oppression disappear. Abstracting space into generic emptiness and void, PG provides players with a depopulated and neutralized image of East Jerusalem and the Palestinian Occupied territories, emptied of the images of the Nakba and the 1967 occupation. Refugee camps, together with the separation wall, borders, and other spatial components of the Israeli occupation are made simply invisible. This way, by erasing the visual tropes of Israeli infrastructural power, PG embodies the operational as well as symbolic/aesthetic

features of the colonial status quo, thus further stretching Hanafi's argument spacio-cide to virtual/augmented reality. Not as negation of the physical, rather as its completion, AR intervenes offering a digital representation of Palestinian land that deliberately cancels the spatial products of the Nakba and the occupation (in addition to military, civil, and judicial powers).

Making Palestine invisible in cyber and digital spaces not only constitute a representational issue related to place-making and the visualization of spacio-cide. Serving as referential input for the software's calculation of routes and navigation advice, this removal also impacts users experience in terms of mobility. For example, the absence of Palestine in GM means that its algorithms are unable to calculate routes between Palestinian villages, in the West Bank and from/to East Jerusalem. In those cases where data are available - such as for the route between Ramallah and Bethlehem – GM algorithms advise users to pass through East Jerusalem. As most Palestinian residents are denied access to their capital since 2000, the software does not only make Palestine substantially invisible but, by ignoring Israeli-imposed restrictions, excludes large sections of Palestinian usership from the service.^{xxxix} In other words, following an exclusionary logic, GM algorithms assume that users are not Palestinians, making them invisible again. Whenever navigating through Palestinian areas of the West Bank, a warning indicates that roads have a 'restricted usage', while no such security alert appears in proximity of Israeli checkpoints or settlements.^{xl} In fact, settlers can plan their

journey from one illegal settlement to another, indicating preferential, fast, and secure routes for their travel.

Whereas the epistemic function of GM rests on a very limited interaction between users and software, other digital services draw their maps and routes through the acquisition of extensive user data.^{xlii} For this very feature, the Israeli-developed navigation app Waze praises itself for allowing users to participate in the making of maps, navigation, and ultimately space.^{xliii} One of Waze's distinctive features consists in generating navigation guidance on the basis of drivers' crowdsourced information, also in real time. Most distinctively, Waze algorithms fulfill their epistemic function in two different ways. First, besides traditional turn-by-turn voice navigation, real-time info on traffic, or location-specific alerts, they acquire anonymized information regarding users' behaviors, such as speed averages and driving habits. Second, users contribute to expanding the database by reporting map errors, temporary disruptions (such as accidents, roadblocks, etc.) and other feedbacks related to their driving experience. But, a user knowledge-based functioning, can cause unpredictable and controversial outcomes that can shake the status quo, becoming an issue for the Israeli authority.

In 2015, during the so-called Intifada Al Quds, Waze suddenly came to be at the center of the Israeli public debate. The application wrongfully featured certain areas of East Jerusalem (Silwan and Wadi Al Joz) as Areas A or B of the West Bank, and thus advised Israeli drivers not to access these 'danger

zones'.^{xliii} The Israeli mayor's vigorous protests promptly addressed Waze's CEO with the claim that these areas stand within Jerusalem municipal boundaries, and thus under full Israeli control. Further sparking Israeli criticism, in 2016 Waze algorithms erroneously advised a military vehicle of the Israeli Defense Forces (IDF) to access the Qalandiah refugee camp, situated between Jerusalem and Ramallah.^{xliv} The use of heavy force and destruction from the Israeli army to rescue the soldiers caused the murder of one Palestinian. Following the event, IDF officials criticized Waze and its software for changing 'facts on the ground' and putting the life of Israelis at risk. In order to address these representational loopholes, Israeli military accompanied Waze's representatives for a field tour across the West Bank in 2017. This cooperation instantly generated an immediate map update: since then, Waze does not indicate any routes to those travelers that intends to drive into the Palestinian territory. Ruling out that users might be Palestinians wanting to travel across the West Bank, Waze unilaterally embed its navigation directions to the strategy of Israel's military needs, exercising a sort of technological redlining that de facto excludes Palestinians. When drivers now approach any 'confusing' point close to Palestinian controlled Area A, the navigation software issues a generic warning indicating the proximity of a dangerous area: 'Can't find a way there' or 'Caution: This destination is in a high risk area or is prohibited to Israelis by law'.^{xlv}

When algorithms seldom unstitch networks of power through knowledge acquired autonomously, sovereign power

intervenes to stitch them back. In recent years, Palestinians have stood up against their disappearance and developed alternative navigation services, such as Maps.me and Doroob Navigator. These services do not only help Palestinian drivers to deal with the ever-changing rules, checkpoint traffic, or to avoid Israeli settlements. By doing so, they address outstanding epistemic questions of visual justice, where Palestinian mobility and trajectories are visible, and the spatial products of Israeli occupation are also kept visible - against the attempted normalization of oppression in the app-worlds.

Epilogue - In defense of visibility

The repression of Palestinian dissent via algorithmic technologies is obviously not the only case that features online repression by state actors. Since social media has become a new space for data collection and mapping, also data visualization has become crucial to state apparatuses of surveillance worldwide. Overall, with the eye of surveillance becoming seemingly unescapable, activists and critical scholarship have increasingly embraced practices and discourses of 'disconnection' on the belief that invisibility produces empowerment.^{xlvi}

This chapter has shown this is not enough in colonial contexts where invisibility is the ultimate goal of the sovereign. In Israel/Palestine, algorithms and software operate in a context where different layers of power overlap, juxtapose, and interconnects. Our analysis primarily reveals how this

contextual complexity affect algorithms' epistemic operations in ways that advance the Israel's government of the (in)visible through erasure, silencing, and bias. On one hand, this evidence strongly puts into question those tenets that strongly emphasize the emancipatory potential of technology, both in academia as well as across digital rights advocacy. On the other hand, algorithms' autonomy – intrinsic to their epistemic function – also reveals software's ability to put power structures into question. In this sense, their political agency mainly unfolds through the tension between the ordering and disordering of networks.

Albeit different, our two cases also point at a number of considerations related to the complex relationship between aesthetics, politics, and technology. While digital maps reveal how, through visual representations, people's political life is affected, the censoring and erasure of contents indicate the way in which the very interruption of political life also depends on questions of aesthetics and visual representations. Studying the digital nodes and edges of an aesthetics by algorithms, implies understanding the many ways algorithmic power through digital images, visualization and their ordering strengthen (or construct) oppressive realities and injustice. For this reason, the aesthetics by algorithms approach allows to register this tension in relation to geopolitical transformations, historical change, or the absence/neutralization of both. In line with Rancière theorizing, our aesthetics by algorithms indicates that – in contrast with those governance trends that purports to depoliticize users' life through technology – visual

representations nevertheless unmask 'the perverse commandeering of politics by a will to art, by a consideration of the people qua work of art'. From this perspective, there exists an ineluctable aesthetic core to political life that configures as a 'delimitation of spaces and times, of the visible and the invisible, of speech and noise, that simultaneously determines the place and the stakes of politics as a form of experience.'^{xlvi}

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ⁱ Halpern, 2014:144.

ⁱⁱ Chun, 2016.

ⁱⁱⁱ Just and Latzer, 2017.

^{iv} Just and Latzer, 2017:21

^v Amoores and Piotukh, 2015.

^{vi} Beer, 2016.

^{vii} Hanafi, 2006.

^{viii} Giddens, 1987.

^{ix} Deleuze, 1992.

^x Van Dijck, 2014.

^{xi} Garfinkel, 2000.

^{xii} Friedman, 2019.

^{xiii} Arafeh et. al., 2015

^{xiv} Along the same lines, the PA's legislation, such as the recently approved law on cybercrime, further narrows and deteriorates the already limited privacy rights and political freedoms that Palestinians enjoy online because of the Israeli occupation

^{xv} Cristiano, 2018.

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- ^{xvi} On the concept of algorithmic transparency: Ananny and Crawford, 2018.
- ^{xvii} 7amleh, 2019.
- ^{xviii} 7amleh, 2019
- ^{xix} Derfner, 2014.
- ^{xx} Distretti, 2019.
- ^{xxi} Martin, 2008.
- ^{xxii} Gips, 1975; Stiny, 1975.
- ^{xxiii} Bevir, 2011.
- ^{xxiv} Beranger, 2018.
- ^{xxv} Rancière, 2004:9.
- ^{xxvi} Halpern, 2014.
- ^{xxvii} Rancière, 2004:13.
- ^{xxviii} Ibid.
- ^{xxix} Janmohamed, 1983; Ahluwalia, 2001.
- ^{xxx} Chun, 2016.
- ^{xxxi} Halpern, 2014:21.
- ^{xxxii} Bittner Jiří, Peter Wonka and Michael Wimmer, 2001.
- ^{xxxiii} The Six-Day War terminated with Israel's seizure of East Jerusalem and West Bank from Jordan; Gaza Strip and Sinai Peninsula from Egypt; and Golan Heights from Syria.
- ^{xxxiv} Israel adopted a resolution (B/9 Marking of Country's Borders) replacing the 1949 Armistice Line on official maps with the Israeli army's line of deployment at the end of the war (including the Golan Heights, the Sinai Peninsula, the Gaza Strip, and the West Bank).
- ^{xxxv} Gordon, 2008.
- ^{xxxvi} Different groups and projects focus on producing alternative maps. Amongst these, MA'AN Development Center, B'tselem, and Visualizing Palestine designed maps and infographics not only making Palestine visible again, but also including data about the economic and social impacts of the occupation. iNakba is a trilingual mobile app (Arabic, Hebrew

and English) based on GPS Navigation technology. This app allows users to locate and learn about Palestinian localities destroyed during, and as a result of, the Nakba since 1948. The recently released Doroob app provides navigation service for overlooked regions across the MENA region. Allowing extensive users' interaction with software, Doroob has been praised for constituting a 'fair' version of Waze.

^{xxxvii} In accordance with resolutions of various bodies of the United Nations, its General Assembly, and Security Council, accepted nomenclatures for the area are State of Palestine, Palestine, Palestinian Territory(-ies), or Occupied Palestinian Territory(-ies).

^{xxxviii} Cristiano and Distretti, 2017.

^{xxxix} Since 2000, the Israeli construction of the separation wall and annexation of East Jerusalem illegally cut off Palestinian residents of the West Bank from accessing the city without a permit. The Israeli permits regime – for work, study, health assistance, or even accessing one's land - constitutes an additional layer of the occupation's governance.

^{xl} Israeli legislations forbid access to Area A (full PA's control) for Israeli citizens. They are granted full mobility in Area C and on all routes connecting settlements to each other or to Israel. Anan AbuShanab, "Connection Interrupted: Israel's Control of the Palestinian ICT Infrastructure and Its Impact on Digital Rights", 7amleh - The Arab Center for the Advancement of Social Media (December, 2018).

^{xli} 7amleh has published (2018:16) an infographic comparing the different mapping services. Cfr. 7amleh – Arab Center for Social Media Advancement, "Mapping Segregation – Google Maps and the Human Rights of Palestinians" (September 2018).

^{xlii} In June 2013, Google acquired the totality of Waze's shares for over \$1 billion, making it the first Israeli start-up to reach such high market value. Noam Bardin, Waze's CEO, published

on LinkedIn an interesting inside perspective on the deal, where he compares Waze to a unicorn. Accessible here: <https://kutt.it/QzbXos>.

^{xliii} As for the 1993 Oslo agreements, these areas define those territories located in the West Bank under the (partial) Palestinian Authority's security and civil control: Area A (full Palestinian Authority's control), Area B (Palestinian civil control and joint Israeli-Palestinian security control).

^{xliiv} Located within Area C and East Jerusalem, near the main checkpoint between Ramallah and Jerusalem and next to the West Bank Barrier. The construction and expansion of Kalandia Checkpoint and the West Bank Barrier in the early 2000s have significantly affected the economic situation in the camp by isolating it from the Israeli job market and Jerusalem.

^{xlv} These spots include the entrances to Nablus and Jenin, the Qalandiyah area, the parts of Gush Etzion bloc, near the towns of Sair and Beit Fajar, and the Tul Karm region.

^{xlvi} Krappi, 2014

^{xlvii} Rancière, 2005:14.