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Counter-mapping the techno-hype in migration research

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ABSTRACT

This paper deals with the techno-hype in migration research and argues that this latter reproduces a state-gaze on migration and technology. It contends that instead of focusing exclusively on the surveillance exercised on migrants through technology, it is key to investigate how migrants are affected by technologies and which struggles they engage over these. The paper develops a counter-mapping approach to the techno-hype which involves taking migrants' struggles as a standpoint, challenging presentism, and investigating the assemblages of low-tech and high-tech in migration governance. The paper moves on by illustrating these two points. First, focusing on Greece, it interrogates what it means to see technology like a migrant, by considering how technologies obstruct migrants' access to asylum and by analysing migrants' claims over technology. Second, it undoes presentism by tracing the genealogy of border technologies, and explores the entanglements between low-tech and high-tech at the border. The paper concludes explaining that a counter-mapping approach conceptualises mobility not as a by-product of technologies of control but, rather, as what states try to bridle, channel and manage.

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Zaatari refugee camp, Jordan: asylum seekers who enter the camp are identified and registered by UNHCR with iris scan machines, and the iris code collected is also used for giving them the monthly cash assistance, provided by the World Food Programme. That is, the monthly amount they are entitled to is associated to each asylum seeker—or better, to their iris code. In so doing, refugees can purchase food by scanning their eyes in front on an iris scan machine located in the shops inside the camp. Pictures of asylum seekers buying food and items inside Zaatari camp with their eyes have been circulating widely on social media and have become one of the icons of so called 'techno-humanitarianism' (Morozov 2013). The example of Zaatari foregrounds that the assumption according to which refugee humanitarianism work as testing grounds for new technologies turns out to be often misleading: indeed, the iris scan technology for taking cash from ATM machine was implemented by Amman Cairo Bank in Jordan back in 2008 and, thus, was originally devised for Jordanian citizens and residents (and not for migrants).

Overall, the incorporation of biometric technologies in migration governmentality and the partial digitalisation of the asylum system have gained centre stage both in academic and non-academic debates. A flourishing migration industry for high-tech companies and private

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contractors sustains and drives the technologization of border controls (Lemberg-Pedersen 2018). In fact, a critical analysis of migration governmentality entails scrutinizing the heterogeneous border technologies that are used on a daily basis for identifying, registering and tracking migrants. However, the mutual entanglements between mobility controls and technologies are not a novelty of the so called 'refugee crisis'. Rather, a political genealogy of the border regime cannot be disjoined from a genealogy of identification technologies. As Adam McKeown has argued, the emergence of border controls in the nineteenth century went in parallel with the development of 'photography, fingerprinting and anthropometric measurement' (McKeown 2008, 12).

An historical insight into the intertwining of mobility controls and border technologies enables dealing with the (partial) digitalisation of the border regime without falling in the trap of presentism and by problematizing the distinction between 'high-tech' and 'low-tech'. Technological solutionism in refugee governmentality is in fact not without history: to the contrary, 'to avoid technological exceptionalism, more attention is needed to historical lineages and precedents' (Seuferling and Leurs 2021, 684). This article deals with the growing techno-hype in debates on the digitalisation of refugee governmentality and contends that migration research should shift away from a state-based view on surveillance and privacy, towards an investigation of how technologies impact on migrants' lives and what they are used for. This entails not reproducing in our research states and private actors' narrative about digital innovation. Drawing on this, the article advances a counter-mapping perspective to the techno-hype in debates on border technologies, which consists in *not seeing migration like a state*: that is, it is a matter of paying attention to the ways in which migrants articulate their claims about the technological barriers they face, and how technology is enforced in refugee camps and at the border.

A counter-mapping approach which focuses on migrants' struggles and subjectivities and on the entanglements of digital and non-digital, conceptualises mobility out of a state-based perspective. As I illustrate later, the techno-hype in migration research contributes to an understanding of mobility through the lens of control and security. That is, by overstating and putting at the forefront (a critique of) technology *de facto* means assuming the primacy of control over mobility, instead of looking at how states constantly re-invent modes of control and capture 'to subdue and discipline the autonomy of migration' (De Genova 2021). This is in line with works in mobility studies that posit the the state 'as a mobile entity, capable of mirroring the mobility of trans-national subjects in the regulation of them' (Gill et al. 2011, 306). To put it otherwise, a counter-mapping approach allows crafting claims for 'mobility justice' (Sheller 2018) and to put at the core a critique of borders, which might incorporate a critique of the use of technology in migration governance, in the place of taking this latter as the starting point.

Thus, in order to counter techno-fetichism and technophilia in debates on migration and technology, it is key to unsettle and abandon the state's point of view on migration, and the governmental anxieties related to how managing migrants better. What does 'not seeing like a state' (Scott 2008) mean in research about migration and technology? First, not seeing migration like a state should not be conflated with an anarchist perspective: rather, it involves disjoining (reflections on) migration from governmental reason; that is, it implies not crafting migration as a problem.

Second, not seeing like a state is about not reproducing the techno-hype enhanced by state actors, humanitarian and migration agencies as well as by high-tech companies about the use of algorithmic-driven systems for controlling refugees. In fact, the border regime is (still) based on multiple papers and on non-digital documents that asylum seekers need to keep and show upon request, in order to confirm their own identity and to prove their right to stay. Reason why this paper calls for attending the entanglements of paper-based migrants' identity and the scattered data doubles. How does our understanding of socio-technical systems used in the border regime change if we abandon the state's point of view on migration and analyse the specific harms these generate on migrants?

This paper engages with this question by advancing a counter-mapping approach to the techno-hype in migration research, and it proceeds as follows. The first section takes into account literature on the technologization of migration governmentality and suggests that, instead of focusing exclusively on how technology is used to either empower or surveil migrants, it is key to investigate how migrants are affected by it. Then, it develops a counter-mapping approach to techno-hype: this entails taking migrants' struggles as an analytical standpoint as well as challenging presentism and investigating the assemblages of low-tech and high-tech in migration governance. The paper moves on by illustrating these two points. First, it interrogates what it means to see technology like a migrant, by considering how technologies obstruct migrants' access to asylum and by focusing on migrants' claims over technology. Second, it engages in undoing presentism by tracing the genealogy of border technologies and explores the entanglements between low-tech and high-tech at the border. The paper concludes explaining that a counter-mapping approach conceptualises mobility not as a by-product of technologies of control but, rather, as what states try to bridle, channel and manage. Seeing technology like a migrant involves decentering debates on privacy and surveillance and taking into account the multiple disruptions enhanced by technologies that migrants experience and the claims that migrants themselves craft about it. Methodologically, the paper partly draws on empirical material I have collected during my research fieldwork in Greece, in Athens and on the island of Lesbos and between 2018 and 2021¹, and at the French-Italian border between 2017 and 2021².

Thinking mobility out of the techno-hype

In the last decade the incorporation of digital and biometric technologies in migration governmentality has become object of a growing literature across disciplines. Terms such as 'techno-humanitarianism', 'digital diaspora', 'high-tech borders' and 'digital passage' have become part of mobility studies and migration studies' lexicon. Data-sharing activities and the operations of turning bodies and movements into data have been investigated in border studies and in critical security studies (Dijstelbloem and Broeders 2015; Glouftsiou 2018). The EU agenda on interoperability has raised concerns among scholars for the techno-solutionist framework it imposes on political debates on migration (Bigo 2020) as well as for projects of identity management (Leese 2022) and data protection (Bellanova and Fuster 2019). If we shift to the scale of the migrant body, the use of biometrics at the border and in refugee camps, has gained traction among scholars since the late Nineties and, more prominently, in the early 2000s (Amoore 2006; Amoore and Hall 2009; Van der Ploeg 1999).

As Katja Lindskov Jacobsen has reconstructed, biometric technologies started to be used to identify asylum seekers in 2002, when UNHCR adopted iris recognition systems to register Afghani refugees displaced in Pakistan with the purpose of organising repatriations to Afghanistan (Jacobsen 2015). In fact, technologies devised to target specific populations have been 'gradually spreading into much wider spheres and practices of governance' (Ajana 2013, 576). Yet, by extracting digital unique features from the body, biometric technology can be twisted to produce evidence of states' violations of human rights and of their infringements of international law (Heller and Pezzani 2016). A case in point is constituted by 'forensic infrastructures' that produce evidence about 'the subjects whose bodies are in need of identification' (M'Charek 2018, 105).

A growing body of literature has developed a situated analysis of the digitalisation of migration governance, studying the functioning of specific databases (Jeandesboz 2011) and data practices of border officials and investigating 'the encounters between digitised control apparatuses and the subjects' (Glouftsiou and Scheel 2021, 125). Overall, this stream of literature subsumes the mechanisms of mobility containment and filtering under the lens of 'sociotechnical infrastructures of migration control' (Amelung et al. 2020, 593). The role played by smartphones

and apps— such as Whatsapp, Viber and Maps.Me—in migration journeys, for finding safe routes and crossing points, for keeping in touch with families and for navigating urban spaces is widely discussed as well (Alencar et al. 2019; Gillespie et al. 2018; Zijlstra and van Liemp 2017).

Koen Leurs and Kevin Smets have coined the expression of ‘digital migration studies’ to designate an emerging interdisciplinary research field which seeks to understand the relation between migration and digital media technologies (Leurs and Smets 2018). It can be objected that this literature unveils migrants’ tactics for dodging border controls or for not being fingerprinted. In some cases, technologies turn out to be lifesaving: for instance, satellite phones are crucial for migrants at sea, to send SOS calls from boats in distress and to become visible to the authorities in order to be rescued (Noori 2020; Schwarz and Stierl 2019). Algorithmic driven systems and biometric technologies are nowadays integrated also in the daily operations of humanitarian actors in refugee camps (Cheesman 2022; Hoffmann 2017; Iazzolino 2021; Madianou 2019) as well as in the asylum procedure (Beduschi 2021; Cameron et al. 2022, Jasmontaite-Zaniewicz and Zomignani-Barboza 2021). Yet, technologies are not used exclusively for surveilling and tracking asylum seekers but also for enhancing their economic and social destitution (Coddington et al. 2020). In fact, mandatory digital intermediations in the asylum procedure—such as the Skype call system in Greece—turn into technological impediments for asylum seekers and contribute to debilitate them (Aradau 2022).

It is quite common to observe that some ‘practices of experimental innovation result in harm to beneficiaries’ (Sandvik et al. 2017, 339). Scholars have also warned about the pervasive and insidious modes of surveillance enhanced through digital and biometric technologies in refugee camps: the trope of a ‘panopticon for refugees’ (Monroy 2021; see also Adelmant 2021) has been recently mobilised for critiquing the implementation of high-tech tools in Greek refugee camps (Molnar 2021a). However, as Jef Huysmans has observed, ‘significant practices of surveillance do however currently not work in such bounded institutional spaces and their hierarchical organisation of visibility’ (Huysmans 2016, 76). Indeed, the image of the digital panopticon implicitly reiterates both the idea that surveillance is centralised and, importantly, that technologies are mostly used in refugee governance for surveilling and tracking them.

Overall, across different disciplinary fields, border technologies have been studied by mainly drawing attention to the modes of surveillance that these enforce and to the risks associated to it. Nevertheless, a primary focus on surveillance, privacy and control as well as on the resistances enacted against these, risks reproducing a citizen-gaze on technology which prioritizes these modes of power over others. Drawing on this literature, I suggest that it is key to push the analysis beyond the ‘empowerment-control nexus’ (Nedelcu and Soysüren, 2020) and explore how migrants are obstructed through the implementation of technologies in asylum procedures, how these latter shape and choke migrants’ subjectivities and which claims do migrants raise about it. Philipp Seuferling has retraced a genealogy of media practices in camps to ‘question, debunk, and relativize the alleged newness of media practices forced migrants engage with’ (Seuferling 2019, 207).

This paper mobilises a similar approach, by counter-mapping the techno-hype which permeates analyses about the technologization of migration governmentality. In fact, the techno-hype in migration research reinforces an understanding of mobility as something to be governed and controlled. More precisely, the conceit of mobility which indirectly stems from techno-hype is shaped by the primacy of control and surveillance as analytical lenses and as main concerns. Drawing on autonomy of migration literature (Mezzadra 2010; Papadopoulos et al. 2008)—that assumes the incorrigibility and excess of human mobility over states’ control and sees this latter as a response to the former—and on mobility studies, I propose to counter-map techno-hype to rethink mobility from the point of view of migrants’ struggles.

What does it mean to counter-map the techno-hype in migration research? First of all, it is important to briefly illustrate what counter-mapping stands for. In critical geography counter-mapping is conceived as the operation of ‘appropriating the state’s techniques and manners of

representation' (Peluso 1995; see also Pickles 2012). Yet, counter-mapping goes beyond an epistemic gesture: it is conceived by critical scholars also as an approach that prompts 'critical organizing and knowledge production' (Collective et al. 2012, 441). In order to unsettle the techno-hype in migration research I propose to adopt a non-cartographic counter-mapping approach that questions, subverts and twists the state-based gaze on migration and technology. A non-cartographic counter-mapping is not conceived here in a metaphorical sense (Tazzioli 2019).

Rather, counter-mapping the techno-hype means, first, abandoning the state-point of view and interrogating how migrants are affected by technological barriers and how they articulate struggles and claims over technologies. Relatedly, counter-mapping entails investigating the entanglements of low-tech and high-tech, and avoiding the trap of presentism, which sees the implementation of border technologies as responses to the so-called 'refugee crisis'. Here I deal with these interrelated meanings of counter-mapping. Before developing these two points, it is key to discuss what 'counter' means in counter-mapping. In fact, unsettling and reversing the state-based gaze on migration does not mean mirroring it from upside down. That is, the 'counter' of counter-mapping does not reproduce a sovereign perspective from below: rather, it acts in a discordant way to the sovereign gaze by challenging the primacy of control and surveillance as analytical lenses for understanding mobility and the ways in which technologies affect migrants.

On seeing technology like a migrant

As part of the state-based gaze on migration, algorithmic-driven systems are presented in both public and academic discourses on migration as ways to streamline identification and asylum procedures, as well as to facilitate the work of humanitarian actors. That is, debates on techno-humanitarianism are animated by questions about how to improve refugee governance. However, a critical analysis of border technologies should be careful in not surreptitiously corroborating a problem-solving approach as the yardstick and efficiency as the goal. As flagged up on the UNHCR's Digital Innovation webpage, refugees should have the right to 'access technology that enables them to build better futures'³. Asylum seekers have been increasingly encouraged to design and find out solutions to their own displacement, as part of the self-reliance trend in humanitarianism that started in the early 2000s (Betts et al. 2015)⁴.

The incorporation of technology in refugee governmentality has boosted the idea of self-reliance as a key principle of humanitarianism, since through digital technologies, the argument goes, asylum seekers learn how to be independent: they 'can procure energy through pay-as-you-go technology, access health solutions through mobile health application schedule their own appointments, get notified about disease outbreaks, or send for medical help'⁵. Against this background, I propose to shift the focus from surveillance strengthened through AI towards a scrutiny of how migrants are obstructed and harmed by technologies and, relatedly, to the struggles they engage in over technological hurdles (Metcalf and Dencik, 2019). Seeing (technologies) like a migrant should not be taken by any means as a formula which reifies migration and homogenises migrant conditions under the same umbrella. Rather, it is conceived here as a methodological and as an analytical approach that pays attention to the claims that migrants raise for and against technologies and that is grounded in the materiality of struggles for movement (Hardt and Mezzadra 2020).

Relatedly, seeing (technologies) like a migrant it entails investigating which kinds of harm and hurdles some technologies generate on migrants at different stages of the journey—at the border, in refugee camps, throughout the asylum procedure—instead of thinking through the lens of surveillance for granted how these affect migrants. Academic and non-academic debates about migration and technologies mainly focus on surveillance, data privacy and the increasing

risk for asylum seekers to be tracked (Latonero and Kift, 2018; Madianou 2019; Molnar 2021b). An insight into migrants' struggles and claims reveals other priorities and problems connected to intrusive technologies and to mandatory digital intermediations between them and humanitarian actors⁶. For instance, between 2016 and 2021 migrants in Greece were obliged to pre-register their asylum claim at the Ministry of Asylum through a skype call system⁷. Moreover, to receive updates from the authorities or to communicate with humanitarian actors, asylum seekers cannot but use apps—like Viber and Whatsapp. These are promoted by migration agencies as digital intermediations that help streamlining the communication between asylum seekers and NGOs or state authorities. In reality, they turn out into digital obstructions that disrupt migrants' access to rights and increase the physical distance between them and humanitarian actors.

An insight into the Greek refugee context enables questioning the techno-hype in migration research from two points of view. First, it sheds light on *technologies of expulsion*: that is, it highlights that technologies are not primarily used for surveilling and tracking migrants but, rather, for obstructing their access to asylum as well as to social rights. Second, it challenges the idea that the digitalisation of asylum is a progressive linear trend⁸. Indeed, during the peak of Covid-19 many steps of the asylum procedure in Greece have been digitalised, and people seeking asylum were forced to navigate a confusing online platform, which only in part was accessible in English. Yet, since the end of 2021 many bureaucratic procedures related to the asylum application have been reversed to the non-digital, requiring migrants to show up in person on many occasions. While some of the digital measures introduced have been maintained—such as the digital asylum card, that asylum seekers nowadays need to swipe to enter and exit some of the closed camps⁹—others were scrapped. Thus, people who seek asylum are confronted with a multiplicity of techno-bureaucratic hurdles and digital obstructions that further delay and disrupt their asylum procedure as well as their access to the monthly financial support.

By speaking of migrants' daily struggles over technology I refer both to collective mobilisations and protests as well as to the more invisible tactics through which they navigate the asylum system. In order to grasp which harms are generated on migrants by technologies, both at the border and throughout the asylum procedure, it is key to attend how migrants navigate the system and how they articulate their claims and mobilisations. If we pay attention to migrants' struggles over technology, it is noticeable that more than privacy and surveillance, to be objects of contention is the multiplication of hurdles to access asylum and humanitarian-financial support that are. The collective struggle that migrants organized in Greece against the Skype system sheds light this point. Athens, August 2018: a group of migrants occupied a building of in the centre of Athens, to protest against the mandatory Skype call system that they are obliged to use in order to pre-book an appointment with the Ministry of Migration and Asylum and lodge their asylum claim.

The Skype system was introduced in 2016 with the official goal of streamlining the procedure and avoiding long queues outside the Ministry of Migration and Asylum. In practice, the digital infrastructures of asylum—which include the Skype system—have been turned into techno-barriers for migrants¹⁰. Indeed, skype is not easily accessible for some migrants—due to the poor internet connectivity that some experience; and they could call only during specific time slots and often without receiving any answer (Aradau 2022; Witcher 2021). The group of migrants who mobilized in Athens voiced the discontent that was widespread among people who wanted to claim asylum in Greece: 'some of us have been dialling the Skype number for weeks but nobody answered us', R. An Afghani national stressed outside the occupied building in Athens. 'What we demand', he continued, 'is to scrap this Skype system, as it keeps kicking most of us out of the asylum procedure'. The collective struggle which lasted one month was not the first mobilisation against the mandatory skype system.

In 2016, few migrants went on a hunger strike because they were not able to reach the Greek Ministry via Skype and lodge their asylum claims: the line was always busy and nobody was picking up their call. Thus, counter-mapping as an analytical approach involves abandoning

a state-based view on migration and technology. As I have illustrated through a focus on the Greek refugee context, instead of taking for granted surveillance and privacy as key stakes it is a matter of interrogating how migrants articulate their claims, what they struggle for, and how they are affected by technologies. In fact, even works that criticise the use of AI in migration governance often end up in reproducing a sovereign gaze by assuming that those technologies are implemented and function as planned, and by considering enhanced surveillance as their main preoccupation.

Undoing presentism

The debate on techno-humanitarianism reproduces governmental anxieties by discussing how through digital technologies refugee governance is streamlined and asylum seekers shall empower themselves, according to the idea that ‘while technology is by no means a solution to displacement, it can improve the lives of those who have been uprooted’ (Keffler 2020; see Leung 2018). That is, it pivots around the need of balancing harms and benefits connected to the use of technologies in refugee governmentality. As part of the state-based gaze on migration, digital technologies enforced in migration governmentality are often presented as a recent and prompt response to the so called ‘refugee crisis’. Such presentism, I argue, contributes to conflate technology with the high-tech. In fact, controls and identification practices have been enforced since the nineteenth century through technologies of different type, among which biometrics systems (Maguire 2009; McKeown 2008; Weitzberg 2020).

Low-tech and high-tech technologies are entangled and used simultaneously as part of daily humanitarian and police operations.

For this reason, methodologically it is important to investigate assemblages of routinised low-tech technologies, non-digitalised documents, and high-tech systems. The tendency to overshadow technologies which are deemed to be ‘low tech’ is not narrowed to migration research and is prominent in critical works on security, where there is an ‘overwhelming attention dedicated to cutting-edge or high-tech aspects of security practices to the detriment of established, old fashioned or low-tech work,’ (Davidshofer et al. 2016, 206; see also Bonelli and Ragazzi 2014). Ultimately, it is the very meaning of technology which should be interrogated and questioned, in light of the partial continuity between digital and non-digital practices used for identifying, classifying and selecting migrants (Seuferling and Leurs 2021). However, avoiding the trap of presentism does not mean stating a substantial homogeneity between past and contemporary modes of control. Rather, building on Foucault’s definition of genealogy, it is a matter of foregrounding partial continuities alongside ruptures and transformations, as long as genealogy ‘seeks to make visible all of those discontinuities that cross us’ (Foucault 1984, 88)¹¹.

Second, it involves questioning how through border technologies migrant subjectivities and new classificatory categories are *made up* (Hacking 1986). Along similar lines, Julia Morris has stretched ‘the concept of migration infrastructure to the colonial *durée*’, calling for ‘a new way of seeing and thinking about migration that takes into account physical and territorial antecedents and contextual specificities’ (Morris 2021, 691). In so doing, ‘infrastructures of injustices [...] can be reconfigured across time and space’ (689). Such a methodological approach illuminates how past techno-social assemblages partially inform and shape present infrastructures of migration control. Importantly, counter-mapping should not be confused with techno-pessimism. Rather, it involves a series of methodological moves for abandoning the state’s point of view on migration. First, a counter-mapping approach interrogates what a focus on technologies enables us seeing and what instead it overshadows and invisibilises about racialised bordering mechanisms.

That is, it scrutinizes the ways in which some modes of power—such as surveillance and violation of data privacy—are prioritized over others. For instance, a focus on the technologization

of borders detached from the carceral economies in which these are embedded overshadows the heterogeneous violent modes of migration containment. Thus, counter-mapping requires analysing the entanglements between carceral spaces, digitalised modes of control and bureaucratic violence, and how these mutually reinforce each other. Second, a counter-mapping approach investigates how biometric systems are enforced on the ground as well as on the glitches, failures and disruptions that repeatedly occur.

In this respect, we can speak of technologies of expulsion to foreground that digital technologies are mostly adopted in refugee governmentality for obstructing migrants from claiming asylum and getting financial-humanitarian support. An exclusive focus on how technology enhances surveillance, monitoring and tracking side-lines the multiple disruptions and forms of debilitation that asylum seekers experience as forced hindered techno-users. Technologies are used for both monitoring migrants closely and for tracking them at a distance. Yet, surveillance is not the exclusive nor the main purpose, as this is often turned into an additional obstacle or into a deterrence for migrants to get access to rights, asylum and financial support. Third, counter-mapping the techno-hype involves coming to grips with the twofold quandary about the risk of de-historicizing border technologies on the one side, and the importance of studying emergent configurations of the border regime on the other.

In other words, it is about asking: how to trace a genealogy of border technologies without overshadowing modes of control, exploitation and exclusion that are enforced through algorithmic-driven systems? Such a question confronts us with the importance of studying contemporary migration governmentality by situating it within a genealogy of border technologies, foregrounding its colonial legacies (Davies and Isakjee 2019). A counter-mapping approach does not flatten the analysis of the current context into a homogenous past-present, as this would lead to de-historicization as well. Indeed, it unfolds the legacies of the current mobility regime and, at once, highlights the moments of rupture, novelty and subtle re-combinations enforced (also) through technologies that were not used before or that were used for other purposes.

For instance, biometric technologies, and fingerprinting in particular, have a clear colonial legacy, that traces back to the second half of the nineteenth century (Arora 2019; Browne 2015)¹². Subsequently, at the end of the nineteenth century they started to be incorporated into border controls practices (McKeown 2008). However, since then the function and goal of biometric technologies at the border has changed over time. A clear example is constituted by the systematic fingerprinting of migrants as soon as they enter European countries or when they are caught by the police. In fact, nowadays the link between biometrics and the (exclusionary) politics of asylum is key. Fingerprints are taken in order to enforce the Dublin Regulation, which notably imposes restrictions on migrants' choice about where they can claim asylum as well as on states' responsibility for processing their asylum applications (Picozza 2017)¹³.

'A critical questioning of the use of fairness in biometrics systems', Ana Valdivia and colleagues noted, 'should also be focused on the historical, political and social contexts in which biometrics are deployed', and not narrowed to struggles over bias (Valdivia et al. 2021, 2). Counter-mapping does not only bring to the fore and highlight aspects that usually remain overshadow; rather, it is transformative as does 'upset power relations' (Hazen and Harris, 2006, 115). That is, the 'counter' of counter-mapping does not exclusively refer to a deconstructive move; it is also about building up, creating and re-purposing. Counter-mapping draws on, and it is partly restricted by, the epistemic structure and the original function of the map; and for this reason, it can be considered a situated practice, that acts within and against the mapping codes (Casas-Cortes et al. 2017; Pickles 2012). Counter-mapping is part of practices of tech-resistance, silent subversions, as well as in collective mobilisations in support of migrants in transit.

In particular, such an analytical approach unsettles the techno-hype in migration debates *from within*—that is, by navigating the interstices and the leeway of manoeuvre of border technologies and by 'appropriating mobility' (Scheel 2018). All this considered, it might be objected, what is the point of speaking of counter-mapping in relation to the techno-hype if it does not

produce alternative maps? As stressed above, one of the starting points for unsettling the techno-hype consists in abandoning the sovereign gaze which surreptitiously underpins research on migration and technology. And this is precisely what is at the core of map-making. Indeed, maps, and migration maps more specifically, reproduce and endorse 'a national biopolitics that, by design' which creates 'regimes of political control over foreign bodies—following the anxious rationale that their infiltration across the state's boundaries may destabilize its imagined community' (van Houtum and Bueno Lacy, 2020, 200; see also Crampton and Krygier, 2006).

Therefore, counter-mapping practices, challenge the state's point view on migration and the 'territorial trap' (Agnew 1994) which underpins the cartographic rationale. They unsettle and subvert epistemologies that makes migration a targetable and governable phenomenon (Casas-Cortes and Cobarrubias 2021). Counter-mapping as an analytical approach echoes cartographic counter-mapping activist practices which are mobilised to produce 'counter-information useful for people's autonomous movements, often against state control' (Ellison and Van Isacker, 2021, 362; see also Casas-Cortes and Cobarrubias 2021). Far from implicating high-tech technology, counter-mapping activist practices are based on technologies used on a daily basis. In fact, they are often enacted through non-digital tools, including cartographic paper-based maps, for instance for helping migrants to move on by visualising the dangerous crossing points and the safe passages and safe shelters along their route (Casas-Cortes et al. 2017)¹⁴.

The criminalisation of migration solidarity in Europe has also targeted counter-mapping activities—as it is the case at the French-Italian border, where locals who mobilised in support of the migrants who try to cross to France by providing maps of the safe and dangerous mountain paths, have been criminalised by state authorities¹⁵. Yet, it is not the purpose of this paper to disclose these cartographic counter-maps—and some of these have been made precisely for remaining secret. What matters is to highlight that counter-mapping is not only an analytical approach but also a practice adopted both by migrants and those who mobilise in solidarity with them, which consists in appropriating, twisting and repurposing mapping technologies.

Investigating paper-digital assemblages

The 'borderwork' (Rumford 2008) of migration controls is shaped by multiple socio-technical assemblages that underpin the daily functioning of asylum and Visa procedures, deportation enforcements and data flows. It is not an exaggeration to say that nowadays we can no longer imagine border procedures enforced without technology. However, it is likewise true that border technologies would not work without different paper-based documents that migrants are giving or are requested to show, nor without data shared on paper among authorities. Migrants are repeatedly exposed to 'bureaucratic inscription', meaning by that the 'social and material dynamics through which migrants are inscribed into official bureaucratic systems' (Horton 2020, 3). Yet, it is noteworthy that such inscriptions are not only paper-based; they are also formed by digital traces and are often the outcome of data extraction processes. Digital traces are re-produced at different stages of migrants' journeys (Dijstelbloem and Broeders 2015). The multiplication and heterogeneity of data extraction processes push us to conceptualise more scattered migrants' digital subjectivities than data doubles.

If on the one hand it is correct to say that the mix of digital and paper-based inscriptions has a longstanding genealogy, on the other it is key to attend the ways in which states, humanitarian actors and high-tech companies systematically resort to biometric technologies for identification, registration and authentication purposes as well as for 'data craving' (Lemberg-Pedersen and Haioty 2020). Given that identification practices contribute to make people legible, it is important to investigate which legibility is produced through the assemblage of digital and non-digital inscriptions (Scott, 2008). Going back to Mc Keown's genealogy of the globalisation of borders, the question to raise is 'what do we mean by technology when we speak about the

technologization of border controls?'. In other words, if the history of the global border regime is also the history of identification technologies, it is key to take into account analyses of socio-technical assemblages both digital and non-digital technologies (Tazzioli and Canzutti 2022).

Likewise, the history of the border regime is also the history of 'different kinds of paper-based infrastructures, mediating emerging imaginaries of refugee governance and humanitarian action' (Seuferling and Leurs 2021, 679). Far from downplaying the transformations produced by digital and biometric technologies in migration governmentality, a counter-mapping approach explores which new classificatory categories and migrants' subjectivities have been brought into being. In order to de-fetishize techno-humanitarianism, the buzzwords 'high-tech; and 'digital innovation' should be critically analysed in light of, respectively, more banal and low-tech technologies and of the assemblages of papers, biometric technologies, non-digital data and human interactions that shape the infrastructures of migration containment. This involves coming to grips with the entanglements of paper-based migrants' identity and the scattered digital subjectivities.

The persistence of paper-based documents is not in opposition to the increasing datafication of mobility nor to the partial digitalisation of asylum. For migrants, keeping and not losing the administrative-bureaucratic papers they are given, is vital at different steps of their asylum procedure and of their journeys—such as after being pushed back or when they appeal against asylum rejection or in order to prove that their identity is not the same stored in a database. Thus, paper-based identity is not simply a matter of tedious bureaucratic paperwork that migrants are requested to go through. Rather, in some contexts losing papers for migrant might mean missing the possibility of proving evidence of human rights violations they have been object of, or not getting access to social rights and financial support they are entitled to (Boehm 2020; Reiter and Coutin 2017). Instead, in some cases deleting digital traces and tearing up paper-based documents turn out to be migrants' ordinary tactics for not being tracked and for erasing their legal and bureaucratic history in a certain country.

A case in point is constituted by push-back operations: the partial absence of digital and paper-based legibility is used as a state's tactic for not being accountable for laws' infringements nor legally responsible for asylum applications. The absence of biometric traces—fingerprints—often overrules migrants' paper-based evidence. This is the case for instance at the French-Italian border, where, as I could observe during my fieldwork, the French police usually does not fingerprint migrants before pushing them back to Italy, to avoid that the digital trace would make them responsible of processing their asylum claim or expose French authorities to legal complaints. Migrants are given a paper called 'refusal of entry' that documents that they have been pushed-back; and yet, the French police does often fill it in with fake information, in particular about migrants' age (ASGI 2018; LDH 2020). This foregrounds the persistence of digital and non-digital assemblages, that is of digitalised and paper-based data and documentations through which migrants' legal identities are crafted and their journeys and presence is registered or non-recorded.

Therefore, not only migrants often try not to leave any digital trace about their passages—for instance by refusing to be fingerprinted; even state authorities are not always inclined to identify, datafy and store digital evidence of migrants' presence, in order not to be accountable. In this sense, we can speak of state's willingness of *not governing too much*, that is of not fully keeping track of migrants or anyway of identifying and tracking migrants in an uneven way, subjected to the political and legal implications this generates. The registration of migrants as well as the daily practices of data sharing, often take place through paper-based documents. This is particularly the case when it comes to data collection activity in semi-institutional reception centres as well as data sharing activities between NGOs and local authorities. At the French-Italian Alpine border, migrants who cross to France usually stop for one night or more in the small city of Oulx, where since 2018 the NGO Kalita has been running a semi-institutional temporary shelter, also with the help of local volunteers.

There, migrants are not identified nor are they fingerprinted: NGOs officers only ask migrants which country they come from and every night they count how many migrants are in the shelter. This data is collected on a paper, and then the data is shared with few actors—the Red Cross, the border police from Bardonecchia, the municipalities of Oulx and Bardonecchia—via a whatsapp group and via email with the Prefecture of Turin. Most migrants who manage to cross to France through the Alps end up in the city of Briançon, where volunteers have been running a shelter since 2017 called *Refuge Solidaire*. In the shelter migrants usually stay for one or two days, before moving on and try to reach major French cities by train. Similarly to what happens in Oulx, at the *Refuge Solidaire* in Briançon migrants are not identified and the volunteers count how many people sleep there every night. The data collected on paper is then transferred on an Excel file and shared upon request with NGOs and local authorities.

In the shelter, migrants who are keen to do so, provide details about their journey and experience: this information, collected by volunteers on paper, is anonymised transferred on a word file and stored in a sort of digital archive of *Refuge Solidaire*. This snapshot on the French-Italian border shows that more than a question of digital versus non-digital data, information knowledge about migrants in transit is produced and stored through an assemblage of both. Moreover, it reveals that the digital technologies adopted on a daily basis by both state and non-state actors are mainly not high-tech but, rather, low-tech ones, which are commonly used—such as Whatsapp chats, excel files, word documents. In all the cases above, technology is never fully absent, and most of the migrants recorded through a panoply of paper-based systems had been fingerprinted before.

Rather, what is noticeable is the persistence of paperwork and paper-based bureaucratic inscriptions and its being intertwined and partially embedded within the digital infrastructures of migration governance. At times, assemblages of digital and non-digital technologies generate glitches and frictions or give rise to inconsistencies between different databases. While it has been rightly stressed that data sharing activities are the invisible borders of migration governance, the obfuscation of paper-based documents and registrations practices through techno-hype should be likewise remarked. In fact, alongside debunking images of smooth data flows as well as of full automation of asylum and border procedure (Côté-Boucher 2020), critical migration research might investigate border technologies starting from their entanglements and frictions with paper-based data.

Conclusion

If it is indisputable that ‘data matter more than ever in the regulation of borders and migration’ (Leese et al. 2022, 5), the stake is to interrogate how bordering mechanisms get reconfigured and new legal and digital migrants’ subjectivities are crafted. By calling for counter-mapping the techno-hype in migration research, the point is not to downplay the impact and the transformations that digital technologies have generated in policing and classifying migrants: these should be indeed object of scrutiny and investigation. Instead, it is a matter of questioning the presentism that percolates research about techno-humanitarianism as well as the fact that the digitalisation of borders appears as an overarching grid through which investigating the ‘contested politics of mobility’ (Squire 2010). Khadijah Abdurahman and SA Smythe have remarked that ‘the discourse about algorithmic bias largely treats race as an aftermath of technology, as a downstream effect’ (Abdurahman and Smythe 2021). In a similar vein, works on the technologization of migration governance should be cautious in not occluding the leeway for criticizing the border regime and in not presenting bordering mechanisms as a downstream of technology.

A counter-mapping approach conceptualises mobility not as a by-product of technologies of control but, rather, as what states try to bridle, channel, and manage, inventing all the time new modes of confinement. If mobility is always relational and entangled with partial immobility

(Adey 2010), a non-sovereign gaze sheds light on the conflicts and struggles over multiple bordering mechanisms that migrants engage in. Likewise, it pushes us to problematize the taken-for-granted nexus between mobility and freedom (Cresswell 2006): as I have illustrated through a focus on the French-Italian border, at times non-recording and letting migrants go is used as a tactic of governmentality for not being accountable nor responsible for asylum applications as well as for (not) granting rights to migrants. By shifting the focus from concerns about surveillance and privacy towards migrants' struggles and claims, it appears that technologies multiply the hurdles that asylum seekers face to access rights and are used as forced digital intermediations between them and the state.

Drawing on that, what I have designated as a counter-mapping approach is not limited to exposing and deconstructing taken-for-granted assumptions about the technologization of migration governmentality. Rather, grounded on the materiality of struggles for 'mobility justice' (Sheller 2018), it strives for re-articulating the debate on border technologies by building on the contestations, collective claims and silent refusals that migrants engage in, within and against the infrastructures of mobility containment. This involves abandoning the state point of view on migration, driven by governmental anxieties about how to govern migrants better, and shifting instead attention to migrants' claims and struggles over technological obstructions. Not seeing border technologies like a state goes beyond imagination: it is related to the laborious work of crafting a critique of the racialized exclusionary bordering mechanisms through which some individuals are turned into migrants.

Notes

1. As part of that research, I have interviewed UNHCR, the European Union Agency for Asylum Greek and international NGOs, Greek authorities at the Ministry of Migration and Asylum, and I have conducted interviews with asylum seekers.
2. I conducted fieldwork at the French-Italian border between 2018 and 2021. I have done participatory observation in the Italian cities of Ventimiglia, Oulx and Bardonecchia and in the French city of Briançon. I have interviewed local authorities, French and Italian lawyers, NGOs and the Italian police as well as migrants who had been pushed back from France to Italy.
3. <https://www.unhcr.org/innovation/connectivity-for-refugees/>
4. <https://www.unhcr.org/innovation/connectivity-for-everyone/>
5. <https://www.unhcr.org/innovation/connectivity-for-everyone/>
6. After being fingerprinted for the first time in a European country, migrants are aware of the digital trap enforced through the Dublin Regulation and the Eurodac database. For this reason, being tracked within or outside refugee camps or being object of data extraction is often not the main concern and struggle of migrants stranded at Europe's borders.
7. In November 2021, the Greek government put an end to the Skype pre-registration system. The decision is in part the outcome of refugees' protests. Yet, since then people who seek asylum can lodge their application only in the closed camps on the Greek islands or at police stations on the mainland, from where they risk being taken to prison.
8. With the outbreak of Covid-19 the digitalisation of refugee governance has been accelerated: asylum seekers could renew their asylum card online only, they were no longer allowed to queue outside the Asylum Service and some asylum interviews were conducted online.
9. The 'smart' asylum card was introduced in November 2020 by the Greek Ministry of Migration and Asylum with the purpose of storing in a single database heterogeneous data collected from each asylum applicant – such as biometric data, personal data, health and work related data, accommodation.
10. See <https://deeply.thenewhumanitarian.org/refugees/articles/2016/05/20/communication-breakdown-refugees-cant-reach-greek-asylum-service>
11. I draw on Bonelli and Ragazzi' definition of 'low tech' as a 'heuristic device to denote the combination of relatively simple modalities of data collection, storage and dissemination' (Bonelli and Ragazzi 2014, 480).
12. Foucault stressed that 'genealogy does not pretend to go back in time to restore an unbroken continuity'; its task is 'to maintain passing events in their proper dispersion it is to identify the accidents, the minute deviations-or conversely, the complete reversals-the errors, the false appraisals, and the faulty calculations that gave birth to those things that continue to exist' (Foucault 1984, 81).

13. It is notable that biometrics 'offered nineteenth-century innovators more than the prospect of identifying criminals: early biometrics promised a utopia of bio-governmentality in which individual identity verification was at the heart of population control' (Maguire 2009).
14. Actually, migrants are not fingerprinted for the sole purpose of enforcing the Dublin Regulation. Fingerprints are officially taken and stored also for anti-terrorism purposes as well as for general security reasons. And yet, biometric technologies are today systematically adopted for determining migrants' eligibility to asylum and to set the geographical restrictions about where they can lodge an asylum application.
15. See for instance: <https://notanatlans.org/maps/mapping-safe-passages/>
16. Information found through interviews that I conducted with local Italian NGOs and activists who mobilise in support of migrants in transit.

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References

- Abdurahman, K. J., and S. A. Smythe. 2021. "Technologies of Black Freedoms: Calling On Black Studies Scholars, with SA Smythe". *Beacons* 15. Accessed 30 September 2022. <https://logicmag.io/beacons/technologies-of-black-freedoms-calling-on-black-studies-scholars-with-sa/>
- Adelmant, V. 2021. "Pilots, Pushbacks, and the Panopticon: Digital Technologies at the EU's Borders. Center for Human Rights and Global Justice". Accessed 30 September 2022. <https://chrgj.org/2021/11/23/pilots-pushbacks-and-the-panopticon-digital-technologies-at-the-eus-borders/>
- Adey, P. 2010. *Mobility*. London: Routledge.
- Agnew, J. 1994. "The Territorial Trap: The Geographical Assumptions of International Relations Theory." *Review of International Political Economy* 1 (1): 53–80. doi:10.1080/09692299408434268.
- Ajana, B. 2013. *Governing through Biometrics: The Biopolitics of Identity*. New York: Springer.
- Alencar, A., K. Kondova, and W. Ribbens. 2019. "The Smartphone as a Lifeline: An Exploration of Refugees' Use of Mobile Communication Technologies During Their Flight." *Media, Culture & Society* 41 (6): 828–844. doi:10.1177/0163443718813486.
- Amelung, N., C. Gianolla, O. Solovova, and J. Sousa Ribeiro. 2020. "Technologies, Infrastructures and Migrations: Material Citizenship Politics." *Citizenship Studies* 24 (5): 587–606. doi:10.1080/13621025.2020.1784636.
- Amoore, L. 2006. "Biometric Borders: Governing Mobilities in the War on Terror." *Political Geography* 25 (3): 336–351. doi:10.1016/j.polgeo.2006.02.001.
- Amoore, L., and A. Hall. 2009. "Taking People Apart: Digitised Dissection and the Body at the Border." *Environment and Planning D: Society and Space* 27 (3): 444–464. doi:10.1068/d1208.
- Aradau, C. 2022. "Experimentality, Surplus Data and the Politics of Debilitation in Borderzones." *Geopolitics* 27 (1): 26–46. doi:10.1080/14650045.2020.1853103.
- Arora, P. 2019. "Politics of Algorithms, Indian Citizenship, and the Colonial Legacy." *Global Digital Cultures: Perspectives from South Asia*, edited by A. Punathambekar A, and S. Mohan, 37–52. Ann Arbor: University of Michigan Press.
- Asgi 2018. "Letter on Push-Back of Unaccompanied Minors at Ventimiglia". Accessed 20 February 2022. <https://www.asgi.it/famiglia-minori/francia-ventimiglia-minori-stranieri-non-accompagnati-lettera-commissione-europea/attachment/letter-on-push-back-of-unaccompanied-minors-at-ventimiglia/>
- Beduschi, A. 2021. "International Migration Management in the Age of Artificial Intelligence." *Migration Studies* 9 (3): 576–596. doi:10.1093/migration/mnaa003.
- Bellanova, R., and G. Fuster. 2019. "Composting and Computing: On Digital Security Compositions." *European Journal of International Security* 4 (3): 345–365. doi:10.1017/eis.2019.18.
- Betts, A., L. Bloom, and N. Weaver. 2015. "Refugee Innovation". *Humanitarian Innovation Project*. Accessed 21 February 2022. <https://www.rsc.ox.ac.uk/files/files-1/refugee-innovation-web-5-3mb.pdf>
- Bigo, D. 2020. "The Socio-Genesis of a Guild Of digital Technologies' Justifying Transnational Interoperable Databases in the Name of Security and Border Purposes: A Reframing of the Field of Security Professionals?" *International Journal of Migration and Border Studies* 6 (1-2): 74–92. doi:10.1504/IJMS.2020.108689.
- Boehm, D. A. 2020. "Documented as Unauthorised." In *Paper Trails: Migrants, Documents, and Legal Insecurity*, edited by S. B. Horton, and J. Heyman, 109–129. Durham, NC: Duke University Press.
- Bonelli, L., and F. Ragazzi. 2014. "Low-Tech Security: Files, Notes, and Memos as Technologies of Anticipation." *Security Dialogue* 45 (5): 476–493. doi:10.1177/0967010614545200.
- Browne, S. 2015. *Dark Matters. On the Surveillance of Blackness*. Durham: Duke University Press.

- Cameron, H., Avi G. Evans, and L. Morris. 2022. "Artificial Intelligence for a Reduction of False Denials in Refugee Claims." *Journal of Refugee Studies* 35 (1): 493–510. doi:10.1093/jrs/feab054.
- Casas-Cortes, M., and S. Cobarrubias. 2021. "Routes Thinking." In *Viapolitics*, edited by W. Walters, C. Heller, and L. Pezzani, 153–182. Durham, NC: Duke University Press.
- Casas-Cortes, M., S. Cobarrubias, C. Heller, and L. Pezzani. 2017. "Clashing Cartographies, Migrating Maps: The Politics of Mobility at the External Borders of EU Rope." *ACME: An International Journal for Critical Geographies* 16 (1): 1–33.
- Cheesman, M. 2022. "Self-Sovereignty for Refugees? The Contested Horizons of Digital Identity." *Geopolitics* 27 (1): 134–159. doi:10.1080/14650045.2020.1823836.
- Coddington, K., D. Conlon, and L. Martin. 2020. "Destitution Economies: Circuits of Value in Asylum, Refugee, and Migration Control." *Annals of the American Association of Geographers* 110 (5): 1425–1444. doi:10.1080/24694452.2020.1715196.
- Collective, C. C., C. Dalton, and L. Mason-Deese. 2012. "Counter (Mapping) Actions: Mapping as Militant Research." *ACME: An International Journal for Critical Geographies* 11 (3): 439–466.
- Côté-Boucher, K. 2020. *Border Frictions: Gender, Generation and Technology on the Frontline*. Abingdon: Routledge.
- Crampton, J. W., and J. Krygiel. 2006. "An Introduction to Critical Cartography." *ACME: An International E-Journal for Critical Geographies* 4 (1): 11–33.
- Cresswell, T. 2006. *On the Move: Mobility in the Modern Western World*. London: Routledge.
- Davidshofer, S., J. Jeandesboz, and F. Ragazzi. 2016. "Technology and Security Practices: Situating the Technological Imperative." In *International Political Sociology*, edited by A. T. Basaran, D. Bigo, E. P. Guittet, and R. B. Walker, 219–241. London: Routledge.
- Davies, T., and A. Isakjee. 2019. "Ruins of Empire: Refugees, Race and the Postcolonial Geographies of European Migrant Camps." *Geoforum* 102: 214–217. doi:10.1016/j.geoforum.2018.09.031.
- De Genova, N. 2021. "On Standby. At the Borders of Europe". Ephemera. Accessed 30 September 2022. <http://www.ephemerajournal.org/contribution/standby%E2%80%A6borders-%E2%80%98europe%E2%80%99>
- Dijstelbloem, H., and D. Broeders. 2015. "Border Surveillance, Mobility Management and the Shaping of Non-Publics in Europe." *European Journal of Social Theory* 18 (1): 21–38. doi:10.1177/1368431014534353.
- Ellison, J., and T. Van Isacker. 2021. "Visual Methods for Militant Research: Counter-Evidencing and Counter-Mapping in Anti-Border Movements." *Interface: A Journal on Social Movements* 13 (1): 349–374.
- Foucault, M. 1984. "Nietzsche, Genealogy, History." In *The Foucault Reader*, edited by P. Rabinow, 76–100. New York: Pantheon Books.
- Gillespie, M., S. Osseiran, and M. Cheesman. 2018. "Syrian Refugees and the Digital Passage to Europe: Smartphone Infrastructures and Affordances." *Social Media + Society* 4 (1): 205630511876444. doi:10.1177/2056305118764440.
- Gill, N., J. Caletrío, and V. Mason. 2011. "Introduction: Mobilities and Forced Migration." *Mobilities* 6 (3): 301–316. doi:10.1080/17450101.2011.590032.
- Glouftsiou, G. 2018. "Governing Circulation Through Technology Within EU Border Security Practice-Networks." *Mobilities* 13 (2): 185–199. doi:10.1080/17450101.2017.1403774.
- Glouftsiou, G., and S. Scheel. 2021. "An Inquiry Into the Digitisation of Border and Migration Management: Performativity, Contestation and Heterogeneous Engineering." *Third World Quarterly* 42 (1): 123–140. doi:10.1080/01436597.2020.1807929.
- Hacking, I. 1986. "Making up People." In *Reconstructing Individualism*, edited by T. C. Heller, M. Sosna, and D. E. Wellbery, 161–171. Stanford: Stanford University Press.
- Hardt, M., and S. Mezzadra. 2020. "Introduction. Migrant Projects of Freedom." *South Atlantic Quarterly* 119 (1): 168–175. doi:10.1215/00382876-8007853.
- Heller, C., and L. Pezzani. 2016. "Ebbing and Flowing: The EU's Shifting Practices of (Non-) Assistance and Bordering in a Time of Crisis." *Near Futures Online* 1: 1.
- Hoffmann, S. 2017. "Humanitarian Security in Jordan's Azraq Camp." *Security Dialogue* 48 (2): 97–112. doi:10.1177/0967010616683311.
- Horton, S. B. 2020. "Introduction. Paper Trails: Migrants, Bureaucratic Inscription, and Legal Recognition." In *Paper Trails: Migrants, Documents, and Legal Insecurity*, edited by Sarah B. Horton and Josiah Heyman, 1–27. Durham, NC: Duke University Press.
- Hazen, H. D., and L. Harris. 2006. "Power of Maps: (Counter) Mapping for Conservation." *Acme* 4 (1): 99–130.
- Huysmans, J. 2016. "Democratic Curiosity in Times of Surveillance." *European Journal of International Security* 1 (1): 73–93. doi:10.1017/eis.2015.2.
- Iazzolino, G. 2021. "Infrastructure of Compassionate Repression: Making Sense of Biometrics in Kakuma Refugee Camp." *Information Technology for Development* 27 (1): 111–128. doi:10.1080/02681102.2020.1816881.
- Jacobsen, K. L. 2015. "Experimentation in Humanitarian Locations: UNHCR and Biometric Registration of Afghan Refugees." *Security Dialogue* 46 (2): 144–164. doi:10.1177/0967010614552545.
- Jasmontaite-Zaniewicz, L., and B. Julia Zomignani. 2021. "Disproportionate Surveillance: Technology-Assisted and Automated Decisions in Asylum Applications in the EU?" *International Journal of Refugee Law* 33 (1): 89–110. doi:10.1093/ijrl/eeab031.

- Jeandesboz, J. 2011. "Beyond the Tartar Steppe: EUROSUR and the Ethics of European Border Control Practices." In *A Threat Against Europe? Security, Migration, Integration*, edited by Peter Burgess, 111–132. Brussels: VUB Press.
- Keffler, N. 2020. "How Technology Can Help the Global Refugee Crisis". *The New Economy*. Accessed 21 February 2022. <https://www.theneweconomy.com/technology/how-technology-can-help-the-global-refugee-crisis>
- Latonero, M., and P. Kift. 2018. "On Digital Passages and Borders: Refugees and the New Infrastructure for Movement and Control." *Social Media + Society* 4 (1): 2056305118764432.
- Leese, M. 2022. "Fixing State Vision: Interoperability, Biometrics, and Identity Management in the E." *Geopolitics* 27 (1): 113–133. doi:10.1080/14650045.2020.1830764.
- Leese, M., S. Noori, and S. Scheel. 2022. "Data Matters: The Politics and Practices of Digital Border and Migration Management." *Geopolitics* 27 (1): 5–25. doi:10.1080/14650045.2021.1940538.
- Lemberg-Pedersen, M. 2018. "Security, Industry and Migration in European Border Control." In *The Routledge Handbook of the Politics of Migration in Europe*, 239–250. London: Routledge.
- Lemberg-Pedersen, M., and E. Haioty. 2020. "Re-assembling the Surveillable Refugee Body in the Era of Data-Craving." *Citizenship Studies* 24 (5): 607–624. doi:10.1080/13621025.2020.1784641.
- Leung, L. 2018. *Technologies of Refuge and Displacement Rethinking Digital Divides*. Lanham, MA: Lexington Books.
- Leurs, K., and K. Smets. 2018. "Five Questions for Digital Migration Studies: Learning from Digital Connectivity and Forced Migration in (to) Europe." *Social Media + Society* 4 (1): 2056305118764425.
- Ligue des droits de l' homme 2020. "La France viole le droit d'asile à la frontière franco-italienne". Accessed 20 February 2022. <https://www.ldh-france.org/droit-dasile-frontiere-franco-italienne-la-france-viole-le-droit-dasile-a-la-frontiere-franco-italienne-confirme-le-conseil-detat/>
- Madianou, M. 2019. "The Biometric Assemblage: Surveillance, Experimentation, Profit, and the Measuring of Refugee Bodies." *Television & New Media* 20 (6): 581–599. doi:10.1177/1527476419857682.
- Maguire, M. 2009. "The Birth of Biometric Security." *Anthropology Today* 25 (2): 9–14. doi:10.1111/j.1467-8322.2009.00654.x.
- M'charek, A. 2018. "Dead-Bodies-at-the-Border': Distributed Evidence and Emerging Forensic Infrastructure for Identification." In *Bodies as Evidence: Security, Knowledge, and Power*, edited by Mark Maguire, Ursula Rao and Nils Zurawski, 89–109. Durham, NC: Duke University Press.
- McKeown, A. M. 2008. *Melancholy Order: Asian Migration and the Globalization of Borders*. New York: Columbia University Press.
- Metcalfe, P., and L. Dencik. 2019. "The Politics of Big Borders: Data (In) Justice and the Governance of Refugees." *First Monday* 24 (4): 1–15. doi:10.5210/fm.v24i4.9934.
- Mezzadra, S. 2010. "The Gaze of Autonomy: Capitalism, Migration and Social Struggles." In *The Contested Politics of Mobility*, edited by V. Squire, 141–162. Abingdon: Routledge.
- Molnar, P. 2021a. "Surveillance Is at the Heart of a Migration Control Agenda". Euractiv. Accessed 20 February 2022. <https://www.euractiv.com/section/justice-home-affairs/opinion/surveillance-is-at-the-heart-of-the-eus-migration-control-agenda/>
- Molnar, P. 2021b. "Robots and Refugees: The Human Rights Impacts of Artificial Intelligence and Automated Decision-Making in Migration." In *Research Handbook on International Migration and Digital Technology*, 134–151. Cheltenham: Edward Elgar Publishing.
- Monroy, M. 2021. "New Camps in Greece: Panopticon for Refugees". Accessed 30 November 2021. <https://digit.site36.net/2021/09/29/new-camps-in-greece-panoptikon-for-refugees/>
- Morozov, E. 2013. "The Naked and the TED." In *The Best Business Writing 2013*, 327–346. New York: Columbia University Press.
- Morris, J. 2021. "Colonial Afterlives of Infrastructure: From Phosphate to Refugee Processing in the Republic of Nauru." *Mobilities* 16 (5): 688–706. doi:10.1080/17450101.2021.1961289.
- Nedelcu, M., and I. Soysüren. 2020. "Precarious Migrants, Migration Regimes and Digital Technologies: The Empowerment-Control Nexus." *Journal of Ethnic and Migration Studies* 48: 1–17.
- Noori, S. 2020. "Navigating the Aegean Sea: Smartphones, Transnational Activism and Viapolitical Interventions in Contested Maritime Borderzones." *Journal of Ethnic and Migration Studies* 48: 1–17.
- Papadopoulos, D., N. Stephenson, and V. Tsianos. 2008. *Escape Routes: Control and Subversion in the 21st Century*. London: Pluto Press.
- Peluso, N. L. 1995. "Whose Woods Are These? Counter-Mapping Forest Territories in Kalimantan, Indonesia." *Antipode* 27 (4): 383–406. doi:10.1111/j.1467-8330.1995.tb00286.x.
- Pickles, J. 2012. *A History of Spaces: Cartographic Reason, Mapping and the Geo-Coded World*. London: Routledge.
- Picozza, F. 2017. "Dubliners: Unthinking Displacement, Illegality, and Refugeeess within Europe's Geographies of Asylum." In *The Borders of "Europe"*, edited by De Genova Nicholas, 233–254. Durham, NC: Duke University Press.
- Reiter, K., and S. B. Coutin. 2017. "Crossing Borders and Criminalizing Identity: The Disintegrated Subjects of Administrative Sanctions." *Law & Society Review* 51 (3): 567–601. doi:10.1111/lasr.12281.
- Rumford, C. 2008. "Introduction: Citizens and Borderwork in Europe." *Space and Polity* 12 (1): 1–12. doi:10.1080/13562570801969333.

- Sandvik, K. B., K. Lindskov Jacobsen, and S. M. McDonald. 2017. "Do No Harm: A Taxonomy of the Challenges of Humanitarian Experimentation." *International Review of the Red Cross* 99 (904): 319–344. doi:10.1017/S181638311700042X.
- Scheel, S. 2018. "Real Fake? Appropriating Mobility Via Schengen Visa in the Context of Biometric Border Controls." *Journal of Ethnic and Migration Studies* 44 (16): 2747–2763. doi:10.1080/1369183X.2017.1401513.
- Schwarz, N. V., and M. Stierl. 2019. "Amplifying Migrant Voices and Struggles at Sea as a Radical Practice." *South Atlantic Quarterly* 118 (3): 661–669. doi:10.1215/00382876-7616224.
- Scott, J. C. 2008. *Seeing Like a State*. New Haven, CT: Yale University Press.
- Seuferling, P. 2019. "We Demand Better Ways to Communicate: Pre-Digital Media Practices in Refugee Camps." *Media and Communication* 7 (2): 207–217. doi:10.17645/mac.v7i2.1869.
- Seuferling, P., and K. Leurs. 2021. "Histories of Humanitarian Technophilia: How Imaginaries of Media Technologies Have Shaped Migration Infrastructures." *Mobilities* 16 (5): 670–687. doi:10.1080/17450101.2021.1960186.
- Sheller, M. 2018. *Mobility Justice: The Politics of Movement in an Age of Extremes*. Brooklyn, NY: Verso Books.
- Squire, V., ed. 2010. *The Contested Politics of Mobility: Borderzones and Irregularity*. London, UK: Routledge.
- Tazzioli, M. 2019. "Counter-Mapping the Borders of Europe: Towards a Non-Cartographic Counter-Mapping Approach." In *Challenging the Political across Borders: Migrants' and Solidarity Struggles*, edited by Celine Cantat, Eda Sevinin, Ewa Maczynska, and Tegiyi Birey, 49–71. London: Central European University.
- Tazzioli, M., and L. Canzutti. 2022. "Undoing the Migration Digital Black Box". Accessed 30 September 2022. <https://blogs.law.ox.ac.uk/blog-post/2022/09/undoing-migration-digital-black-box>
- Valdivia, A., J. Corbera-Serrajòrdia, and A. Swianiewicz. 2021. "There Is an Elephant in the Room: Towards a Critique on the Use of Fairness in Biometrics". *AI and Ethics*, 1–19.
- Van der Ploeg, I. 1999. "The Illegal Body: Eurodac and the Politics of Biometric Identification." *Ethics and Information Technology* 1 (4): 295–302. doi:10.1023/A:1010064613240.
- Van Houtum, H., and L. B. Rodrigo. 2020. "The Migration Map Trap. On the Invasion Arrows in the Cartography of Migration." *Mobilities* 15 (2): 196–219. doi:10.1080/17450101.2019.1676031.
- Weitzberg, K. 2020. "Biometrics, Race Making, and White Exceptionalism: The Controversy Over Universal Fingerprinting in Kenya." *The Journal of African History* 61 (1): 23–43. doi:10.1017/S002185372000002X.
- Witcher, A. 2021. "Greece's Discriminatory Migrant Regime: Volunteers, Informal Street-Level Bureaucrats, and Moral Rationalities." *Journal of Refugee Studies* 34 (2): 1540–1559. doi:10.1093/jrs/feaa083.
- Zijlstra, J., and I. van Liempt. 2017. "Smart (Phone) Travelling: Understanding the Use and Impact of Mobile Technology on Irregular Migration Journeys." *International Journal of Migration and Border Studies* 3 (2/3): 174–191. doi:10.1504/IJMS.2017.083245.