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Border Necrotechnics

Automation, Surveillance, and the Racial Politics of Migration Control

Petra Molnar

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*From Gaza, to Kashmir, to Sudan and beyond—this book is dedicated to all
those who continue to fight the oppressive rhetoric of ‘the inevitable’ and
dream of a brighter world.*

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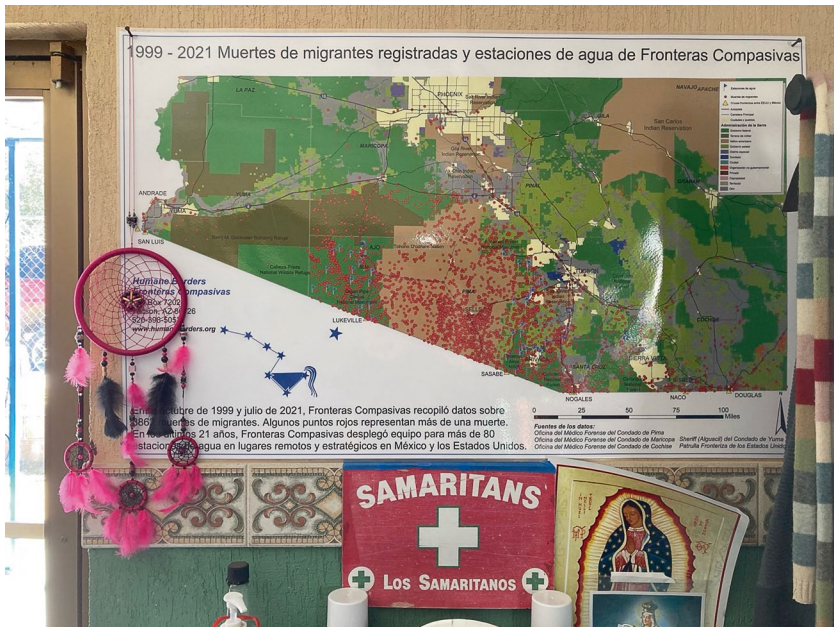


CHAPTER 1

Introduction: The Criminalization of Mobility in the Age of AI

Abstract This opening chapter develops the core theoretical intervention of this book: that AI and automation are reshaping ‘crimmigration,’ the convergence of immigration control and criminal law as theorized by scholars such as César Cuauhtémoc García Hernández, in ways that produce what I call *border necrotechnics*. Building on crimmigration as a foundational criminological insight, this chapter argues that automated border systems now operate as instruments of pre-emptive criminalization, where people-on-the-move are not only screened for infractions but also continuously evaluated for potential future risk. In this framework, the border becomes a technologically mediated regime of exposure, abandonment, and selective protection, echoing Achille Mbembe’s necropolitical analysis, where automated decision-making sorts people into those who are allowed to live and move, and those who are rendered deportable, detainable, or removable through digital means. *Border necrotechnics* therefore names the fusion of racialized suspicion, predictive surveillance, and automated enforcement that transforms human mobility into a site of technological triage and slow violence.

Keywords Border necrotechnics • Crimmigration • Predictive surveillance • Automated enforcement • Necropolitics



Map at the Casa De La Esperanza, House of Hope, a now-closed shelter in Sasabe, Mexico. Each red dot represents a person who has died crossing the Sonoran Desert | P. Molnar | 2022

In southern Arizona, the Sonoran Desert stretches across the horizon, dotted through with majestic saguaro cacti, cryosote bushes perfuming the air. Like a wound in the landscape, a rusty border wall runs along the El Camino Del Diablo, the Devil's Highway, bisecting Mexico and the United States. You can drive up to it and touch it, its rust staining your hand for the rest of the day, a physical reminder of its violent and immutable presence. Parts of it are painted deep black, a remnant from the first Trump administration, to make the metal panels extra hot in the scorching sun, more difficult to climb.

But this is only one type of border infrastructure in the desert. Rising above this landscape are the towers. Sitting atop various hills at irregular intervals, they are tall, narrow structures equipped with cameras, radar, thermal sensors, and software that promises to read the landscape more quickly and more efficiently than any human eye can. Some are fixed, rooted into the shrubby desert floor, others are smaller and mobile, repositioned as enforcement priorities shift. At their base, chain-link fences hum faintly with electricity. Warning signs state that the area is restricted: authorized personnel only. 'No Hay Agua. No Water Here,' a sign reads.

There is movement in a dusty arroyo, a dried riverbed. A young man appears. His name is José. He is 22 years old, from a small city in Honduras, where he had begun studying biology at a local university before the costs became impossible to sustain. He had always wanted to be a doctor. He still says this when asked, though now it sounds less like a plan but more like a fragment of another life. He walks carefully, placing his feet where others have stepped before him, following a path that is not marked but learned through instruction, rumor, and memory. Sometimes he wears carpet shoes, makeshift overshoes with fabric strips on the bottom that do not leave easily traceable footprints. The strap of José's backpack has worn a raw line into his shoulder. Inside it are a few changes of clothes, a plastic bag with documents wrapped in more plastic against his sweat and dust, and a notebook José has carried since he left home, its pages filled unevenly with English vocabulary words, doodles of hearts, diagrams of the human body ('I need to keep studying my medical lessons,' says José), and numbers written over and over again (phone numbers, debts). The water he carries in his large plastic black jug is already warm. He has been told not to drink too quickly. He has also been told not to fall behind.

José has been moving for days, probably longer. He has crossed rivers, navigated checkpoints, hidden in trucks, slept in safe houses, been extorted, robbed, and, at one point, left behind and found again. He travels with others, though not always the same people. At night, they speak in low voices as the desert grows quieter and colder, sharing stories that are part instruction, part warning. Someone says the towers can see heat. Someone else says they can hear footsteps. No one knows exactly how they work.

José's rich life does not matters to these towers. Instead, José is transformed into something else: a signal, a data point, an alert. The slow rhythm of his walking becomes a pattern and the heat of his body becomes a signature. He is simply a deviation from the background that becomes an anomaly to be flagged, tracked, and later, intercepted. The system does not know his name. It does not register the years he spent studying medical diagrams, the patients he once imagined treating, the mother who calls him every Sunday after church when there is signal. It does not register his fears, exhaustion, hunger, or intentions.

The system only registers a threat.¹

Encounters between people and borders are no longer just physical, legal, or bureaucratic. All around the world, bordering practices are increasingly mediated through technological infrastructures and digital systems that

¹This vignette is a composite based on four research trips to Arizona between 2022 and 2024, including treks into the Sonoran desert and across the Mexico border to the town of Sasabe with local search and rescue groups such as Battalion Search and Rescue, run by James Holeman and Abby Carpenter. See <https://battalionsar.com/>

transform human movement into suspicion and mobility into risk. The modern border is not only a physically fixed place, but rather a distributed system of automated decisions that observe, classify, predict, and act, without transparency, accountability, and oversight, often with life-altering effects (see also Molnar 2024; Beduschi 2019, Ozkul 2023, Tsernatonis 2018, Madianou 2019 and 2024; Godin, M., Ozkul, D. and Humphris, R., 2025, and others).² This digitized border extends beyond territorial lines into transnational databases, public/private procurement contracts, vast biometric registries, technologized refugee reception centers, tapped cell phones, and opaque predictive risk scores, in an ever-expanding array of digital systems used to control human movement. This book examines how these digital border technologies reshape the criminalization and securitization of migration and reinscribe racial politics of exclusion (see

² Molnar, Petra. *The Walls Have Eyes: Surviving Migration in the Age of Artificial Intelligence*. New York: The New Press, 2024; Chouliraki, L. and Georgiou, M., 2022. *The digital border: Migration, technology, power*. NYU Press.; Pickering, S. and Weber, L., 2006. Borders, mobility and technologies of control. In S. Pickering and L. Weber (eds.) *Borders, Mobility and Technologies of Control*. Dordrecht: Springer, pp.1–19. Nieto-Gomez, R. (2016). Walls, sensors and drones: Technology and surveillance on the US–Mexico border. In E. Vallet (Ed.), *Borders, Fences and Walls: State of Insecurity?* (pp. 191–210). Routledge. Ponzanesi, S. and Leurs, K., 2022. Digital migration practices and the everyday. *Communication, Culture and Critique*, 15(2), pp.103–121; Mahmoudi, M., 2025. *Migrants in the Digital Periphery: New Urban Frontiers of Control*. University of California Press. Madianou, M., 2019. Technocolonialism: Digital innovation and data practices in the humanitarian response to refugee crises. *Social media+ society*, 5(3), pp 1–13; Madianou, M., 2024. *Technocolonialism: When technology for good is harmful*. Polity Press; Beduschi, A., 2021. International migration management in the age of artificial intelligence. *Migration Studies*, 9(3), pp.576–596; Godin, M., Ozkul, D. and Humphris, R., 2025. Digital technologies and migration: behind, beyond and around the black box. *Journal of Ethnic and Migration Studies*, 51(14), pp.3571–3589; Csernatonis, R., 2018. Constructing the EU's high-tech borders: FRONTEX and dual-use drones for border management. *European Security*, 27(2), pp.175–200; Palmiotto, F., 2024. Procedural fairness in automated asylum procedures: Fundamental rights for fundamental challenges. *Computer Law & Security Review*, 55, p.106065. Vavoula, N., 2021. Artificial Intelligence (AI) at Schengen borders: automated processing, algorithmic profiling and facial recognition in the era of techno-solutionism. *European Journal of Migration and Law*, 23(4), pp.457–484. Sánchez-Monedero, J. and Dencik, L., 2022. The politics of deceptive borders: 'biomarkers of deceit' and the case of iBorderCtrl. *Information, Communication & Society*, 25(3), pp.413–430. Madianou, M., 2019. The biometric assemblage: Surveillance, experimentation, profit, and the measuring of refugee bodies. *Television & New Media*, 20(6), pp.581–599. Van Den Meerssche, D. (2022) Virtual borders: International law and the elusive inequalities of algorithmic association. *European Journal of International Law*, 33(1), pp. 171–204.

also Achiume 2021 and others).³ Positioned at the intersection of criminology, critical migration studies, and socio-technical analysis, I argue that autonomous surveillance technologies have been developed and deployed not to simply ‘manage’ migration (see also broadly Geiger and Pecoud 2012).⁴ Instead, these tools actively produce and reproduce racialized suspicion, legitimize expanded policing and carceral practices, and enable new forms of pre-emptive control over people-on-the-move,⁵ leading to adverse outcomes including discrimination, racism, and even death.

In order to analyze these effects, I advance the concept of *border necro-technics* to describe the assemblage of automated systems, technological infrastructures, and digitized practices through which states and corporations decide which lives are rendered killable, deportable, or indefinitely surveillable at and beyond the border. The book situates border surveillance technologies within a broader genealogy of punishment, racialized security practices, and the policing of global mobility (see also Tazzioli 2020, Mezzadra, S. and Neilson, B. 2013, Balibar 2002).⁶ Artificial intelligence (AI) systems in particular automate historical logics of exclusion, embedding them in digital infrastructures that appear neutral yet replicate deep structural inequalities (Achiume 2021, Noble 2018, Benjamin 2019).⁷ These systems are also embedded in and cannot be separated from

³ Achiume, E.T. (2021) *Racial and xenophobic discrimination and the use of digital technologies in border and immigration enforcement*. Report of the Special Rapporteur on Contemporary Forms of Racism, Racial Discrimination, Xenophobia and Related Intolerance. UN Doc. A/HRC/48/76. Geneva: United Nations Human Rights Council.

⁴ Geiger, M. and Pécoud, A., 2010. The politics of international migration management. In M. Geiger and A. Pécoud (eds.) *The Politics of International Migration Management*. Basingstoke: Palgrave Macmillan, pp.1–33.

⁵ As noted later in this chapter, whenever possible, this book deliberately uses person-centered language to directly contest the dehumanization in much of migration scholarship. See also Molnar, Petra. *The Walls Have Eyes: Surviving Migration in the Age of Artificial Intelligence*. New York: The New Press, 2024

⁶ Balibar, É. (2002) *Politics and the other scene*. London: Verso. Mezzadra, S. and Neilson, B. (2013) *Border as method, or, the multiplication of labor*. Durham: Duke University Press. Tazzioli, M. (2019) *The making of migration: the biopolitics of mobility at Europe’s borders*. London: Sage.

⁷ Achiume, E.T., 2019. Migration as decolonization. *Stanford Law Review*, 71(6), pp.1509–1574.; Benjamin, R., 2019. *Race After Technology: Abolitionist Tools for the New Jim Code*. Medford, MA: Polity Press. Noble, S.U. (2018) *Algorithms of oppression: how search engines reinforce racism*. New York: NYU Press. See also Achiume, E.T. (2021) *Racial and xenophobic discrimination and the use of digital technologies in border and immigration enforcement*. Report of the Special Rapporteur on Contemporary Forms of Racism, Racial

other broader arrangements of systemic violence, including labor exploitation, systems of apartheid, and environmental degradation.

This opening chapter develops the core theoretical intervention of the book: that AI and automation are reshaping ‘crimmigration,’ the convergence of immigration control and criminal law as theorized by scholars such as César Cuauhtémoc García Hernández (2015),⁸ in ways that produce *border necrotechnics*. Expanding on this foundational insight, this chapter argues that automated border systems operate as instruments of pre-emptive criminalization, where people-on-the-move are not only screened for infractions but are also continuously evaluated for potential future risk. In this framework, the border becomes a technologically mediated regime of exposure, abandonment, and selective protection and life-giving, building on Achille Mbembe’s foundational theory of necropolitics (Mbembe 2003)⁹ that describes the use of social and political power to dictate how some people may live and how others must die, focusing on the state’s power to manage, control, and inflict death. Border necrotechnics extends this analysis to capture the next expansive frontier of these ‘deathworlds,’ where automated decision-making sorts people into those who are allowed to live and move, and those who are rendered deportable, detainable, or removable. There is also an element of performativity here (see Butler, 2015, see also Dunn 2010),¹⁰ continually turning the border into a technological testing ground (Molnar 2021, 2024),¹¹ a spectacle (De Genova 2013)¹² where innovation blurs reality on the ground yet reinforces violent power differentials nonetheless. *Border necrotechnics* attempts to explicitly name this performed fusion of racialized suspicion,

Discrimination, Xenophobia and Related Intolerance. UN Doc. A/HRC/48/76. Geneva: United Nations Human Rights Council.

⁸ García Hernández, C.C. (2015) Crimmigration law. Washington, DC: American Bar Association.

⁹ Mbembe, A. (2003) ‘Necropolitics’, *Public Culture*, 15(1), pp. 11–40.

¹⁰ Butler, J. (2015) *Notes Toward a Performative Theory of Assembly*. Cambridge, MA: Harvard University Press. Dunn, K. C. (2010). There is No Such Thing as the State: Discourse, Effect and Performativity. *Forum for Development Studies*, 37(1), 79–92. <https://doi.org/10.1080/08039410903558285>

¹¹ Molnar, Petra. *The Walls Have Eyes: Surviving Migration in the Age of Artificial Intelligence*. New York: The New Press, 2024; Molnar, P., 2021. Technological testing grounds and surveillance sandboxes: Migration and border technology at the frontiers. *Fletcher Forum of World Affairs*, 45(2), p.109

¹² De Genova, N. (2013). Spectacles of migrant ‘illegality’: the scene of exclusion, the obscene of inclusion. *Ethnic and Racial Studies*, 36(7), 1180–1198.

predictive surveillance, and automated enforcement that transforms human mobility into a site of technological triage and violence.

I begin by situating modern migration governance within longer histories of exclusion. Borders, though now treated as naturalized and immutable fixtures of global order, are relatively young political inventions, always contested and always racialized (Anderson 1991, De Genova 2002, Walters 2006).¹³ Their enforcement functions as a mechanism for the racial ordering of mobility (Achiume 2021, De Genova 2002).¹⁴ And while border technologies are often introduced to make these practices appear neutral, in practice, digital technologies instead automate and deepen long-standing inequities and systemic Othering and exclusion (see also Molnar 2024 and others).¹⁵ The evolution of crimmigration from the late 20th century to the present shows these practices clearly: from the growing militarization of the Mexico–United States border, to the rise of offshore detention zones in Australia, to Europe’s so-called hotspot system of far-flung yet highly surveilled refugee camps. Across these geographies, the logic is similar: the mobile person becomes a potential threat to be preemptively managed through punishment, policing, surveillance, and deterrence (more broadly see, for example, McCulloch, J. and Pickering, S. 2015).¹⁶ Automated systems escalate this transformation by embodying a logic of hyper-efficiency: more surveillance, faster categorization, and fewer procedural protections.

Automated decision-making in migration accelerates this shift from reactive to anticipatory forms of border policing. People-on-the-move are no longer screened for perceived wrongdoing but rather for statistical probabilities of future non-compliance or perceived danger. This form of pre-emptive control marks a profound shift in the governance of human mobility, aligning border management with broader criminological trends

¹³Anderson, B. (1991) *Imagined communities: reflections on the origin and spread of nationalism*. Rev. edn. London: Verso.

De Genova, N.P. (2002) ‘Migrant “illegality” and deportability in everyday life’, *Annual Review of Anthropology*, 31, pp. 419–447. Walters, W. (2006) ‘Border/control’, *European Journal of Social Theory*, 9(2), pp. 187–203.

¹⁴De Genova, N.P. (2002) ‘Migrant “illegality” and deportability in everyday life’, *Annual Review of Anthropology*, 31, pp. 419–447.

¹⁵Molnar, Petra. *The Walls Have Eyes: Surviving Migration in the Age of Artificial Intelligence*. New York: The New Press, 2024.

¹⁶McCulloch, J. and Wilson, D., 2015. *Pre-crime: Pre-emption, precaution and the future*. Abingdon: Routledge.

such as predictive policing and algorithmic sentencing seen in criminal justice proceedings (Robertson, Khoo and Song, 2020; Ziosi and Pruss, 2024; Brayne, S. 2021; Ferguson, A. G. 2017).¹⁷ This chapter ends by proposing the book's central argument: that digital border technologies do not merely modernize existing border systems. Instead, they restructure the border into a dynamic, networked, and data-driven apparatus of exclusion that continuously produces criminality and racialized exclusion (Achieme 2021, Molnar 2024; see also Mahmoudi et al 2024).¹⁸ By embedding racialized suspicion into algorithmic infrastructures, digital technologies of border governance transform the mobile person into a perpetual security object—a subject of surveillance, management, and control (see also Huysman 1995, Walters 2010).¹⁹ This framing sets the stage for subsequent chapters, which explore racialization, securitization, surveillance, corporate power, legal governance, and alternative futures in depth.

Importantly, AI and automation are reshaping the vast power differentials that deepen the criminalization of mobility and the racial violence that underpins it (see Miceli et al., 2022).²⁰ They do so by embedding

¹⁷ Khoo, C., Robertson, K. and Song, Y. (2020) *To Surveil and Predict: A Human Rights Analysis of Algorithmic Policing in Canada*. Toronto: Citizen Lab, Munk School of Global Affairs & Public Policy, and International Human Rights Program, University of Toronto Faculty of Law.; Ziosi, M. and Pruss, D. (2024) 'Evidence of what, for whom? The socially contested role of algorithmic bias in a predictive policing tool', *Proceedings of the 2024 ACM Conference on Fairness, Accountability, and Transparency (FAccT '24)*. Available at: <https://doi.org/10.1145/3630106.3658991>; Brayne, S. (2021) *Predict and surveil: Data, discretion, and the future of policing*. Oxford University Press. Ferguson, A. G. (2017) *The Rise of Big Data Policing: Surveillance, Race, and the Future of*

Law Enforcement. New York: New York University Press.

¹⁸ Achieme, E.T., 2021. Racial borders. *Georgetown Law Journal*, 110, p.445. Aizeki, M., Mahmoudi, M. and Schupfer, C. (eds.), 2024. *Resisting Borders and Technologies of Violence*. Foreword by Ruha Benjamin. Chicago: Haymarket Books; Molnar, Petra. *The Walls Have Eyes: Surviving Migration in the Age of Artificial Intelligence*. New York: The New Press, 2024.

¹⁹ Huysmans, J., 1995. Migrants as a security problem: Dangers of 'securitizing' societal issues. In R. Miles and D. Thranhardt, eds. *Migration and European Integration: The Dynamics of Inclusion and Exclusion*. London: Pinter Publishers, pp. 53–72. Walters, W., 2010. Migration and security. In J.P. Burgess (ed.) *The Routledge Handbook of New Security Studies*. London: Routledge, pp.217–228.

²⁰ Miceli, M., Posada, J. and Yang, T., 2022. Studying up machine learning data: Why talk about bias when we mean power? *Proceedings of the ACM on Human-Computer Interaction*, 6(GROUP), Article 34, pp.1–14. <https://doi.org/10.1145/3492853>

older racialized logics of suspicion into new technological forms: by shifting border control from reactive enforcement to anticipatory intervention, and by diffusing responsibility across states, agencies, and corporate actors in ways that render violence harder to see and harder to contest. *Border necrotechnics* is my attempt to specifically codify the racialized assemblage of automated systems (see also Vukov and Sheller 2013),²¹ infrastructures, and practices through which states and their private partners sort people into categories of risk, legitimacy, and disposability, exposing them to harm, containment, abandonment, and ultimately death.

METHODS, POSITIONALITY, AND THE LIMITS OF THIS BOOK

This book draws on empirical research conducted between 2018 and 2024 across multiple border contexts, including the Mexico-US borderlands, Greece, and the Occupied Palestinian Territories, among others. The methodology combines legal and policy analysis with qualitative and ethnographic approaches: interviews, on-the-ground visits, long-term engagement, and relationship building, in order to highlight how technological systems are lived on the ground (see also Molnar 2024).²² Some interviews and insights in this book are reproduced verbatim while others are composite case studies (see also Hoare 2022)²³ and ethnographic vignettes, reflecting both ethical obligations in a world increasingly hostile to people-on-the-move and the fact that the power of witnessing in these spaces often emerges through repeated encounters, not single moments of testimony.

This combination of methodologies, while sometimes complex and imperfect, is deliberate. Legal and policy analysis matters because border technologies are embedded in existing legal categories, procurement frameworks, administrative procedures, and regulatory gaps and unearthing the power differentials in these systems becomes critical in order to analyze their far reaching effects. However, this type of analysis alone

²¹ Vukov, T. and Sheller, M., 2013. Border work: Surveillant assemblages, virtual fences, and tactical counter-media. *Social semiotics*, 23(2), pp.225-241.

²² Molnar, P., 2024. *The Walls Have Eyes: Surviving Migration in the Age of Artificial Intelligence*. New York: The New Press

²³ Hoare, R., 2022. Using composite case material to develop trauma-informed psycho-education for social care workers looking after unaccompanied minors in residential care in Ireland. *Health and Social Care in the Community*, 30(6), pp.e5863-e5874. <https://doi.org/10.1111/hsc.14017>

cannot capture how these systems are encountered in practice by real people and communities on the ground: the confusion of a digitized asylum procedure, the dread of a biometric checkpoint, the altered route through a hostile landscape, the dehumanizing effects of being reduced to a risk score in a system that already erases human complexity. At the same time, ethnographic work in border spaces raises difficult ethical and methodological questions. To document border violence is never a neutral act. This type of research can and does risk reproducing the extractive logic of the very systems one seeks to critique (e.g., see Molnar 2024, see Paris et al 2023).²⁴ For that reason, my work is guided by a trauma-centered approach and relational ethics, relying on years of being present in border spaces and long-term relationship-building to at least attempt to minimize the vast power differentials between a researcher and their subject. And as a way to limit (if never fully erase) the extractive nature of all writing, my own research agenda is also coupled with participatory action research, for example, through our Migration and Technology Monitor project of the Refugee Law Lab, York University, where we incubate projects by our colleagues-on-the-move, position them as experts in policy and media debates, and directly redistribute funding supports to Global Majority countries.

My own positionality as a researcher, lawyer, advocate, and a person-on-the-move also shapes the choices that I made when witnessing, extracting, and analyzing the data that ultimately forms this text. Therefore, rather than claim false objectivity, this positionality also works as an exercise in accountable partiality: trying to illuminate structures of harm while remaining attentive to the limits of access, language, and representation. Storytelling—and indeed, the concept and method of story stewardship—matters here (see, for example, Kimmeter 2013).²⁵ Border technologies are often presented as abstract systems. However, their effects are also intimate and embodied. They are literally felt in the body (see also

²⁴ Molnar, P., 2024. *The Walls Have Eyes: Surviving Migration in the Age of Artificial Intelligence*. New York: The New Press; Bieszczad, S.R., Cengiz, E., Kaikkonen, V., Kronberger, S., Madden, R.A., Paris, R., Samper, J.A. and Sasse, L.M., 2023. Taking and leaving: complicating the relationship between extraction and ethnography. *EASST Review*, 42(2). Available at: <https://easst.net/easst-review/42-2/taking-and-leaving-complicating-the-relationship-between-extraction-and-ethnography/>

²⁵ Kimmeter, R.W., 2013. *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants*. Minneapolis: Milkweed Editions.

Lemberg -Pedersen and Haioty 2020),²⁶ in the decision to alter a migration route, in the pressure of administrative uncertainty, in the opacity that follows a refused explanation made by a digital decision-maker, and the life altering consequences. There is nothing neutral or arms-length about these effects of border necrotechnics. Returning to lived experience is one way to resist the aesthetic of neutrality that so often surrounds technical systems.

Also, a note on terminology. First, whenever possible, this book uses person-centered language. I specifically use the term *people-on-the-move as much as possible* to expand the terminology commonly used when discussing human migration and how immigration detention technologies are experienced. This deliberate use of more inclusive terminology does not seek to undermine the fact that some categories of mobile communities, such as refugees and people seeking asylum, face particular vulnerabilities and often experience greater risks and harms as a result of migration management technologies. It simply highlights that, at the end of the day, there are *people* at the center of all technological development and deployment. Second, many interchangeable terms and concepts have risen in the various analyses and critiques of technologies used at the border and in migration, from the broad terms ‘border technologies,’ to ‘digital border governance’ (e.g., see McGregor and Molnar 2023),²⁷ to ‘migration management technologies.’ Whenever possible, this book will use the term ‘digital borders’ when discussing the types of technologies used in migration more generally, while maintaining specificity as pertains to the types of projects discussed (e.g., surveillance, automated decision-making, or biometrics).²⁸

Finally, this book attempts to present a short and accessible intervention expanding the theoretical frameworks that can help us understand the human impacts of border technologies. Wherever possible, in addition to

²⁶ Lemberg-Pedersen, M. and Haioty, E., 2020. Re-assembling the surveillable refugee body in the era of data-craving. *Citizenship Studies*, 24(5), pp.607–624. <https://doi.org/10.1080/13621025.2020.1784641>

²⁷ McGregor, L. and Molnar, P., 2023. *Digital Border Governance: A Human Rights Based Approach*. Geneva: OHCHR and University of Essex

²⁸ Generative AI tool was used for cross-checking references as well as for the creation of chapter keywords and the index for this volume. The index was generated with the assistance of an AI language model (Protonmail’s Lumo) which analysed the manuscript to identify candidate terms and produced the underlying index-entry markup. The final structure, term selection, and sub-entry hierarchy were reviewed and edited by the author.

relying on established scholarship to inform my analysis, I draw on scholarship from junior scholars and scholars from the Global Majority, communities which are routinely under-cited in academic works. Any omissions, lack of clarity, and mistakes are my own, particularly pertaining to the vast corpus of criminological literature, a discipline I have been invited to learn from for this volume. For those interested in further readings to complement this non-exhaustive intervention, please see the Appendix for further literature from criminology, migration studies, sociology, human rights, socio-technical studies, anthropology, and some poetry too.

BORDERS AS HISTORICAL AND RACIAL PROJECTS

In current policy discourse and round-the-clock news cycles, borders are often treated as natural features of political life, as if they were self-evident expressions of national sovereignty. Yet borders are historical constructs (Eder 2006, Achiume 2021; Washington 2024).²⁹ They are products of war, colonial expansion, cartographic imposition, and legal codification. They are also products of imagination: stories that states tell about territory, belonging, danger, and who counts as an insider or outsider (see Anderson 1991).³⁰ The modern border is not simply a line on a map or a physically demarcated space. Instead, it is a political project that organizes space, regulates bodies, and distributes life chances.

Critical migration scholarship has long shown that borders do not merely separate states, instead, they stratify mobility (De Genova 2013; Mezzadra and Neilson 2013).³¹ Some people move with relative ease, protected by the legitimacy of powerful passports, recognized credentials, and a presumption of innocence. Others move under suspicion, burdened by visa restrictions, carrier sanctions, biometric checks, and the constant

²⁹ Eder, K., 2006. Europe's borders: The narrative construction of the boundaries of Europe. *European journal of social theory*, 9(2), pp.255-271; Achiume, E.T., 2021. Racial borders. *Georgetown Law Journal*, 110

³⁰ Anderson, B. (1991) Imagined communities: reflections on the origin and spread of nationalism. Rev. edn. London: Verso.

³¹ De Genova, N., 2013. Spectacles of migrant 'illegality': the scene of exclusion, the obscene of inclusion. *Ethnic and Racial Studies*, 36(7), pp.1180-1198. <https://doi.org/10.1080/01419870.2013.783710>; Mezzadra, S. and Neilson, B., 2013. *Border as Method, or, the Multiplication of Labor*. Durham: Duke University Press.

possibility of detention or expulsion (see Nyabola 2023).³² Mobility, in this sense, is not evenly shared. It is apportioned unequally along a continuum of power differentials. This unevenness is also deeply racialized. As Achiume (2021),³³ Mahmoud (2007),³⁴ and others have argued, contemporary border regimes are inseparable from the colonial histories that continue to shape the global order.³⁵ The international legal system may profess sovereign equality, yet mobility rights are distributed in ways that reflect older imperial hierarchies. Those from formerly colonized regions

³² Nyabola, N., 2023. *Digital Identities and Border Cultures: The Limits of Technosolutionism in the Management of Human Mobility*. Washington, DC: Atlantic Council Digital Forensic Research Lab (DFRLab). Available at: <https://www.atlanticcouncil.org/in-depth-research-reports/report/digital-identities/>

³³ Achiume, E.T., 2021. Racial borders. *Georgetown Law Journal*, 110

³⁴ Mahmud, T., 2007. Geography and international law: towards a postcolonial mapping. *Santa Clara Journal of International Law*, 5(2), pp.525–561.

³⁵ For additional literature, see for example: E. Tendayi Achiume & Asli U. Ba'li, Race And Empire: Legal Theory Within, Through, And Across National Borders, 67 *Ucla L. Rev.* 1386 (2021); Cathryn Costello & Michelle Foster, Race Discrimination Effaced At The International Court Of Justice, 115 *Ajil Unbound* 339 (2021); Justin Desautels-Stein, A Prolegomenon To The Study Of Racial Ideology In The Era Of International Human Rights, 67 *Ucla L. Rev.* 1536, 1545 (2021); Nadine Elenany, (B)Ordering Britain: Law, Race And Empire 197 (2020); Michelle Foster & Timnah Rachel Baker, Racial Discrimination In Nationality Laws: A Doctrinal Blind Spot Of International Law?, 11 *Colum. J. Race & L.* 83, 94 (2021); Eddie Bruce-Jones, Refugee Law In Crisis: Decolonizing The Architecture Of Violence, In *Race, Criminal Justice, And Migration Control: Enforcing The Boundaries Of Belonging* 176, 177, 179 (Mary Bosworth Et Al. Eds., 2018); Glen Peterson, Colonialism, Sovereignty And The History Of The International Refugee Regime, In *Refugees In Europe, 1919–1959: A Forty Years' Crisis?* 213, 213–14 (Matthew Frank & Jessica Reinisch Eds., 2017); Karin De Vries & Thomas Spijkerboer, Race And The Regulation Of International Migration. The Ongoing Impact Of Colonialism In The Case Law Of The European Court Of Human Rights, 39 *Neth. Q. Hum. Rts.* 291 (2021). For An Overview Of Scholarship On Race And International Refugee Law Specifically, See E. Tendayi Achiume, Race, Refugees, And International Law, In *The Oxford Handbook Of International Refugee Law* 43, 44 (Cathryn Costello Et Al. Eds., 2021). See Also B.S. Chimni, The Geopolitics Of Refugee Studies: A View From The South, 11 *J. Refugee Stud.* 350, 358 (1998); Lucy Mayblin, Asylum After Empire: Colonial Legacies In The Politics Of Asylum Seeking (2017); Fre'De'Ric Me'Gret, The Contingency Of International Migration Law: 'Freedom Of Movement,' Race, And Imperial Legacies, In *Contingency In International Law: On The Possibility Of Different Legal Histories* 179, 186 (Ingo Venzke & Kevin Jon Heller Eds., 2021); James Souter, Towards A Theory Of Asylum As Reparation For Past Injustice, 62 *Pol. Stud.* 326, 338 (2014); James C. Hathaway, A Reconsideration Of The Underlying Premise Of Refugee Law, 31 *Harv. Int'l L.J.* 129, 170 & N.241 (1990); John Reynolds, Emergency And Migration, Race And The Nation, 67 *Ucla L. Rev.* 1768, 1782–83 (2021); De Vries & Spijkerboer, *Supra*, At 298

are disproportionately cast as threatening, excessive, or out of place. Their movement is framed as crisis and their arrival becomes an incursion, a risk, or an attack, with apocalyptic terminology like ‘crisis,’ ‘flood,’ accompanying the arrivals (Ibrahim 2005; Collyer and King 2016).³⁶ Their presence is treated as something to be managed, deterred, or contained (Macklin 2004; FitzGerald, D. S. 2020).³⁷

The border therefore cannot be separated from its true function as a racial demarcator: not simply a territorial line, but a mechanism for preserving global racial inequality (Achiume 2021, see also Thompson 2013; Mahmoudi 2021).³⁸ It decides not only who may enter but also whose movement is intelligible as lawful, whose suffering is recognizable as deserving, and whose body is made available for surveillance. In this sense, borders both reflect global power relations while actively reproducing them. For example, De Genova’s concept of deportability captures how this reproduction operates in practice (De Genova 2002, 2013).³⁹ The ability to *be* deported is not equivalent to deportation. Rather, it names the condition of being perpetually removable, perpetually subject to the threat of expulsion. This threat disciplines and controls, shaping where people live, work, travel, seek help, and how they imagine the future. Even those who are not deported are governed through the ongoing possibility of deportation, making precarity into the status quo, reproducing trauma and deepening rifts that irrevocably damage communities (e.g., see Kirsh 2025).⁴⁰

³⁶ Ibrahim, M., 2005. The securitization of migration: A racial discourse. *International Migration*, 43(5), pp.163–187; Collyer, M. and King, R., 2016. Narrating Europe’s migration and refugee ‘crisis’. *Human Geography*, 9(2), pp.1–12.

³⁷ Macklin, A., 2004. “Disappearing Refugees: Reflections on the Canada-U.S. Safe Third Country Agreement,” *Columbia Human Rights Law Review*, 36; FitzGerald, D. S. (2020) ‘Remote control of migration: Theorising territoriality, shared coercion, and deterrence’, *Journal of Ethnic and Migration Studies*, 46(1), pp. 4–22.

³⁸ Achiume, E.T., 2021. Racial borders. *Georgetown Law Journal*, 110; Debra Thompson, Through, Against And Beyond The Racial State: The Transnational Stratum Of Race, 26 *Cambridge Rev. Int’l Affs.* 133, 135 (2013); Mahmoudi, M., 2021. *Race & Mobility In The Digital Periphery: New Urban Frontiers Of Migration Control* (Doctoral Dissertation).

³⁹ De Genova, N.P., 2002. Migrant ‘illegality’ and deportability in everyday life. *Annual Review of Anthropology*, 31, pp.419–447; De Genova, N., 2013. Spectacles of migrant ‘illegality’: the scene of exclusion, the obscene of inclusion. *Ethnic and Racial Studies*, 36(7), pp.1180–1198

⁴⁰ Kirsch J, Haran H. Collective trauma in the forced migration context: A scoping Review. *Transcult Psychiatry*. 2025 Oct;62(5):613–624. doi:10.1177/13634615251341853.

CRIMMIGRATION AND THE PUNISHMENT LOGIC OF MOBILITY CONTROL

The concept of crimmigration is indispensable to understanding this continuity of harm. Advanced most influentially by García Hernández (2015, see also Stumpf 2006),⁴¹ crimmigration refers to the intensifying convergence between criminal law and immigration law (García Hernández 2015).⁴² Over the past several decades, immigration enforcement has increasingly borrowed the practices, institutions, and imaginaries of criminal justice, yet without the (albeit limited) safeguards that exist in the criminal justice system (e.g., see Bosworth 2014, see also Molnar and Silverman 2019).⁴³ Immigration detention, in particular, is a useful example to unpack this conflation. Immigration detention, often framed as an administrative or civil measure, is formally distinct from criminal detention, yet in practice increasingly resembles it (McGregor 2023).⁴⁴ Unlike criminal incarceration, which follows from the commission of an offense and is subject to established procedural safeguards, immigration detention is justified on the basis of migration management, typically to verify identity, prevent absconding, or facilitate removal. Importantly, under international law, irregular entry or stay does not constitute a crime per se. For example, the *1951 Refugee Convention*, the foundational international legal instrument that codifies refugee protection norms, explicitly prohibits penalizing asylum seekers for unauthorized entry when they present themselves without delay (Article 31),⁴⁵ and international human rights bodies have consistently affirmed that migration status alone should not

⁴¹ García Hernández, C.C., 2015. *Crimmigration Law*. Washington, DC: American Bar Association; Stumpf, J., 2006. The crimmigration crisis: Immigrants, crime, and sovereign power. *American University Law Review*, 56(2), pp.367–419.

⁴² García Hernández, C.C., 2015. *Crimmigration Law*. Washington, DC: American Bar Association.

⁴³ Bosworth, M., 2014. *Inside Immigration Detention*. Oxford: Oxford University Press; Silverman, S.J. and Molnar, P., 2019. Caged at the border: Immigration detention and the denial of human rights to asylum seekers and other migrants. In *The Routledge History of Human Rights* (pp.579–600). Routledge.

⁴⁴ McGregor, L., 2023. *Detention and Its Alternatives under International Law*. Oxford: Oxford University Press.

⁴⁵ Convention Relating to the Status of Refugees (adopted 28 July 1951, entered into force 22 April 1954) 189 UNTS 137, art.31 (Prohibition of penalties on account of illegal entry or presence).

trigger punitive detention (UNHCR 2012; Working Group on Arbitrary Detention 2018).⁴⁶

Therefore, in a legal sense, there is no such thing as ‘illegal migration,’ only administrative infractions related to immigration status. Yet despite this formal distinction, the conditions and logics of immigration detention increasingly mirror those of the criminal justice system: individuals are confined in secure facilities, often for prolonged and indeterminate periods, with limited access to legal remedies. As seen in the recent policy decisions by the second Trump administration to expand the US immigration detention estate, administrative violations become grounds for detention (American Immigration Council 2026).⁴⁷ When Trump took office in January 2025, approximately 40,000 people were held in immigration detention but by the end of that year, the number had risen to nearly 66,000, a 75 percent increase, with the administration targeting a capacity of over 100,000 beds, representing the largest expansion of immigration detention in US history (American Immigration Council, 2026).⁴⁸ There is also a growing entanglement of criminal and immigration law, through which people on the move are governed as if they were offenders, even in the absence of criminal wrongdoing (see also García Hernández 2015; DeGenova 2002).⁴⁹ Immigration detention thus occupies a paradoxical space: legally administrative, but materially and symbolically punitive, a routine extension of punishment that revealing how systems of migration

⁴⁶UNHCR (United Nations High Commissioner for Refugees), 2012. Guidelines on the Applicable Criteria and Standards relating to the Detention of Asylum-Seekers and Alternatives to Detention. Geneva: UNHCR. Available at: <https://www.refworld.org/policy/legalguidance/unhcr/2012/en/87776>; UN Working Group on Arbitrary Detention, 2018. *Revised Deliberation No. 5 on Deprivation of Liberty of Migrants*. UN Doc. A/HRC/39/45. Geneva: United Nations Human Rights Council. Available at: <https://www.ohchr.org/en/press-releases/2018/02/migrant-detention-must-be-last-resort-un-rights-group-underlines-its-revised>

⁴⁷American Immigration Council, 2026. *Immigration Detention Expansion in Trump’s Second Term*. Washington, DC: American Immigration Council. Available at: <https://www.americanimmigrationcouncil.org/report/immigration-detention/>

⁴⁸American Immigration Council, 2026. *Immigration Detention Expansion in Trump’s Second Term*. Washington, DC: American Immigration Council. Available at: <https://www.americanimmigrationcouncil.org/report/immigration-detention/>

⁴⁹García Hernández, C.C., 2015. *Crimmigration Law*. Washington, DC: American Bar Association; De Genova, N.P., 2002. Migrant ‘illegality’ and deportability in everyday life. *Annual Review of Anthropology*, 31, pp.419–447; De Genova, N., 2013. Spectacles of migrant ‘illegality’: the scene of exclusion, the obscene of inclusion. *Ethnic and Racial Studies*, 36(7), pp.1180–1198.

control blur the boundary between migration governance and punishment (Silverman and Molnar 2019).⁵⁰ This convergence has both practical and symbolic dimensions. Practically, it expands the state's coercive capacity, increasingly through digital means. Detention, surveillance, electronic monitoring, and data-sharing become normalized components of migration governance (see also Ghezelbash and Molnar 2025).⁵¹ Symbolically, it transforms how mobile communities are perceived. The person-on-the-move is no longer primarily an applicant, worker, family member, or asylum seeker. They become, increasingly, a potential offender (see also broadly the work of Amoore 2013).⁵²

Crimmigration is also not confined to any one jurisdiction, becoming a hallmark of how Global North states practice bordering. In the United States, programs linking local law enforcement and federal immigration authorities have deepened the overlap between policing and deportation (American Immigration Council 2026; McCarroll, E. 2020).⁵³ In Europe, asylum systems increasingly operate through securitized frameworks in which reception, screening, and detention are fused, often trapping people in carceral refugee camps for years at a time. In Australia, offshore detention has made confinement central to migration control, presupposing that a person is detainable unless proven otherwise (e.g., see Sharples 2021; see also Ghezelbash et al. for a broader discussion on securitization in the Australia Maritime context 2018),⁵⁴ a direct example of the reverse

⁵⁰Silverman, S.J. and Molnar, P., 2019. Caged at the border: Immigration detention and the denial of human rights to asylum seekers and other migrants. In *The Routledge History of Human Rights* (pp. 579-600). Routledge

⁵¹Ghezelbash D and Molnar P, From Surveillance to Empowerment: Advancing the Responsible Use of Technology in Alternatives to Detention. Kaldor Centre for International Refugee Law, International Detention Coalition, and Refugee Law Lab, 2025.

⁵²Amoore, L., 2013. *The Politics of Possibility: Risk and Security Beyond Probability*. Durham, NC: Duke University Press

⁵³American Immigration Council, n.d. *Understanding Immigration Enforcement Databases*. Washington, DC: American Immigration Council. Available at: <https://www.americanimmigrationcouncil.org/content-understanding-immigration-enforcement-databases/> McCarroll, E., 2020. Weapons of mass deportation: Big data and automated decision-making systems in immigration law. *Georgetown Immigration Law Journal*, 34(3), pp.705-750.

⁵⁴Sharples, R., 2021. Disrupting state spaces: Asylum seekers in Australia's offshore detention centres. *Social Sciences*, 10(3), p.82. Ghezelbash, D., Moreno-Lax, V., Klein, N. and Opeskin, B., 2018. Securitization of search and rescue at sea: the response to boat migration in the Mediterranean and offshore Australia. *International & Comparative Law Quarterly*, 67(2), pp.315-351

onus principle where innocence is secondary to detention and punishment.⁵⁵ Across these contexts, the same logic recurs: migration is framed not as an integral element to the human condition, but instead as a security and a criminality problem that needs to be solved. This framing has far-reaching consequences, especially as new technologies are developed and deployed at the border. The framing of crimmigration reshapes what kinds of solutions appear reasonable (see also Martins 2023).⁵⁶ For example, automated technologies are weaponized against mobile populations to root out threats and frauds, instead of being used as a tool to identify racist border guards (see also Molnar 2024). This is a clear normative choice that a powerful set of actors is making that determines which innovations take precedence. Once migration is understood as risk, technologies designed to predict, track, and neutralize that risk become not only acceptable but necessary. Sensors, drones, biometric databases, algorithmic risk models, and mobile surveillance towers become justified as pragmatic responses to a dangerous world, the only necessary tools to stem the ‘flow’ of yet another ‘invasion’ coming to the border (see Strickland 2025, Cohen 2018).⁵⁷

FROM REACTIVE ENFORCEMENT TO ANTICIPATORY GOVERNANCE

If crimmigration explains the punitive turn in migration governance, the introduction of AI and automated technologies may help explain its temporal transformation. AI and automated systems shift border governance from a reactive orientation to an anticipatory one. The aim is no longer

⁵⁵The reverse onus principle (or reverse burden of proof) is a legal rule that shifts the obligation to prove a fact from the prosecutor or state to the defendant. Rather than requiring the state to prove every element of an offence beyond reasonable doubt, it places the burden on the defendant to disprove a specific element or establish a defence, challenging the traditional presumption of innocence enshrined in international human rights law.

⁵⁶Martins, B.O. and Jumbert, M.G., 2023. EU Border technologies and the co-production of security ‘problems’ and ‘solutions’. In *The Spiralling of the Securitisation of Migration in the European Union* (pp. 104–121). Routledge.

⁵⁷Strickland, P., 2025. The long, lethal history of Trump’s ‘invasion’ rhetoric. *Inkstick*, 15 December. Available at: <https://inkstickmedia.com/the-long-often-lethal-history-of-trumps-anti-immigrant-invasion-rhetoric-conspiracy-theory/>; Cohen, R., 2018. How democracy became the enemy: In Hungary and Poland, the liberal West used to be the promised land. Not anymore. *New York Times*, 6 April. Available at: <https://www.nytimes.com/2018/04/06/opinion/sunday/orban-hungary-kaczynski-poland.html>

simply to detect infractions after they occur or to adjudicate claims based on present evidence. Increasingly, it is to predict and intervene *before* movement even happens, before a person arrives, before a decision is formally made, and, in some cases, before a risk has even materialized.

This shift forms part of a broader movement toward anticipatory governance across domains such as policing, insurance, welfare fraud detection, and national security (see TNI 2023).⁵⁸ As Amoore (2013)⁵⁹ argues, contemporary governance increasingly operates by acting on uncertain futures. Decisions are made on the basis of probabilities, correlations, and inferred risks rather than direct evidence of wrongdoing. The future thus becomes governable. At the border, this anticipatory logic takes multiple forms. For example, algorithmic risk-scoring systems rank visa applicants (Molnar and Gill 2018),⁶⁰ while predictive analytics identify likely crossing routes based on historical movement patterns, used by both humanitarian actors as well as border enforcement (IOM 2023, Frontex 2023, see also Maidanou 2019 and 2021 more broadly, see also Ahmad 2021).⁶¹ Automated triage systems channel asylum seekers into differentiated procedures based on variables treated as proxies for credibility or threat, based on social media monitoring and risk assessment analysis, much of which is not made public even to the person who is being assessed (Ozkul 2023).⁶²

⁵⁸Transnational Institute, 2023. *The Everywhere Border: Digital Migration Control Infrastructure in the Americas*. Amsterdam: Transnational Institute. Available at: <https://www.tni.org/en/article/the-everywhere-border>

⁵⁹Amoore, L., 2013. *The Politics of Possibility: Risk and Security Beyond Probability*. Durham, NC: Duke University Press.

⁶⁰Molnar, P. and Gill, L., 2018. *Bots at the Gate: A Human Rights Analysis of Automated Decision-Making in Canada's Immigration and Refugee System*. Toronto: International Human Rights Program, University of Toronto Faculty of Law and the Citizen Lab, Munk School of Global Affairs. Available at: <https://citizenlab.ca/wp-content/uploads/2018/09/IHRP-Automated-Systems-Report-Web-V2.pdf>

⁶¹International Organization for Migration (IOM), 2023. *Displacement Tracking Matrix*. Geneva: IOM. Available at: <https://dtm.iom.int> Frontex, 2023. *EUROSUR: European Border Surveillance System*. Warsaw: European Border and Coast Guard Agency. Available at: <https://www.frontex.europa.eu/we-know/eurosur> Ahmad, N., 2021. Refugees and algorithmic humanitarianism: Applying artificial intelligence to RSD procedures and immigration decisions and making global human rights obligations relevant to AI governance. *International Journal on Minority and Group Rights*, 28(3), pp.367–435.

⁶²Ozkul, D., 2023. *Automating Immigration and Asylum: The Uses of New Technologies in Migration and Asylum Governance in Europe*. Oxford: Algorithmic Fairness for Asylum Seekers and Refugees (AFAR) Project, University of Oxford/Hertie School. Available at: https://www.hertie-school.org/fileadmin/2_Research/1_About_our_research/2_

Biometric infrastructures also enable persistent identification across jurisdictions, transforming the border from a momentary checkpoint into a continuous record that follows a person all over the world (see also Amoore 2006; Sparke 2006).⁶³

What matters here is not only that these systems predict (or at least present themselves as being capable of prediction), but also how they predict, and from what kinds of worlds their predictions are made. These systems do not uncover objective futures. Rather, they extrapolate from historical data, drawing patterns from past decisions, enforcement practices, and institutional records. When the data used to train these systems is produced within environments shaped by racial profiling, discriminatory enforcement, and geopolitical hierarchy, the outputs they generate cannot be understood as neutral forecasts (see Leese 2014).⁶⁴ Instead, they are deeply sedimented histories, repackaged as objective technical output. What appears as ‘prediction’ is often the reiteration of past inequalities under the guise of computational objectivity (Gebru 2020; Noble 2018; Benjamin 2019).⁶⁵

This process is also not simply a matter of bias in an otherwise functional system. Rather, it reflects the conditions under which data itself is produced (see also Bagchi 2023).⁶⁶ Border datasets are not comprehensive or representative accounts of human movements. They are partial, uneven, and shaped by the priorities of enforcement (Nyabola 2023, Madianou

[Research_centres/Centre_for_Fundamental_Rights/AFAR/Automating-immigration-and-asylum_Ozkul.pdf](#)

⁶³Amoore, L., 2006. Biometric borders: Governing mobilities in the war on terror. *Political Geography*, 25(3), pp.336–351; Sparke, M., 2006. A neoliberal nexus: Economy, security and the biopolitics of citizenship on the border. *Political Geography*, 25(2), pp.151–180.

⁶⁴Leese, M. (2014) ‘The new profiling: Algorithms, black boxes, and the failure of anti-discriminatory safeguards in the European Union’, *Security Dialogue*, 45(5), pp. 494–511.

⁶⁵Gebru, T., 2020. Race and gender. In M.D. Dubber, F. Pasquale and S. Das (eds.) *The Oxford Handbook of Ethics of AI*. Oxford: Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780190067397.013.16>; Noble, S.U., 2018. *Algorithms of Oppression: How Search Engines Reinforce Racism*. New York: NYU Press. Benjamin, R., 2019. *Race After Technology: Abolitionist Tools for the New Jim Code*. Medford, MA: Polity Press.

⁶⁶Bagchi, S., 2023. What is a black box? A computer scientist explains what it means when the inner workings of AIs are hidden. *The Conversation*, 22 May 2023, Available at: <https://theconversation.com/what-is-a-black-box-a-computer-scientist-explains-what-it-means-when-the-inner-workings-of-ais-are-hidden-203888>

2024).⁶⁷ They disproportionately capture encounters with those already subject to surveillance, over-representing certain populations while rendering others invisible. As a result, predictive systems are trained on data that encodes patterns of over-policing and selective attention, amplifying the likelihood that those already marked as suspicious will continue to be flagged as such. In this sense, ‘bad data’ is not an anomaly to be corrected, but a structural feature of systems that are built on unequal grounds (see also broadly Richardson, R., Schultz, J. M., and Crawford, K. 2019).⁶⁸

These dynamics are further compounded when situated within broader processes of digital colonialism, or is the extraction of data from people and communities in ways mirror older colonial forms of appropriation. As scholars such as Couldry and Meijas (2019), Nyabola (2018), and Haggerty and Ericson (2000)⁶⁹ have argued, data extraction often follows the contours of global inequality, with populations in the Global Majority and other marginalized contexts serving as sites of intensive data capture, often without meaningful consent or control (Leese, M., Noori, S. and Scheel, S., 2022).⁷⁰ People on the move become sources of biometric and behavioral data and their journeys, vulnerabilities, and identities become inputs into systems from which they derive little or no benefit (Canzutti and Tazzioli, 2023).⁷¹ At the border, this manifests in the large-scale collection of biometric and behavioral data from people on the move, which is then aggregated, analyzed, and circulated within systems controlled by states and private actors in the Global North. These data flows not only reproduce asymmetries of power, but also actively contribute to the refinement of predictive systems that are later redeployed to govern those same populations. The border

⁶⁷ Nyabola, N., 2023. *Digital Identities and Border Cultures: The Limits of Technosolutionism in the Management of Human Mobility*. Washington, DC: Atlantic Council Digital Forensic Research Lab (DFRLab). Available at: <https://www.atlanticcouncil.org/in-depth-research-reports/report/digital-identities/>; Madianou, M., 2024. *Technocolonialism: When Technology for Good is Harmful*. Cambridge: Polity Press.

⁶⁸ Richardson, R., Schultz, J.M. and Crawford, K., 2019. Dirty data, bad predictions: How civil rights violations impact police data, predictive policing systems, and justice. *New York University Law Review Online*, 94, pp.192–233.

⁶⁹ Haggerty, K. D. and Ericson, R. V. (2000) ‘The surveillant assemblage’, *The British Journal of Sociology*, 51(4), pp. 605–622.

⁷⁰ Leese, M., Noori, S. and Scheel, S. (2022) ‘Data matters: The politics and practices of digital border and migration management’, *Geopolitics*, 27(1), pp. 5–25

⁷¹ Canzutti, L. and Tazzioli, M., 2023. Digital–nondigital assemblages: Data, paper trails, and migrants’ scattered subjectivities at the border. *International Political Sociology*, 17(3), olad014. <https://doi.org/10.1093/ips/olad014>

thus becomes both a site of control and a site of extraction, where mobility generates data that is used to further discipline mobility.

Lyon's work on surveillance is instructive in this regard because it reminds us that modern data systems do not simply observe: they sort (Lyon 2007).⁷² They classify populations into categories that shape access, scrutiny, and treatment, transforming complex human lives into administratively legible types. The border, in this sense, becomes the ultimate sorting machine (see also Jones 2009),⁷³ distinguishing not only between citizen and non-citizen, but between trustworthy and suspicious, low-risk and high-risk, deserving and undeserving. These distinctions move beyond the realm of description, becoming operational. They determine who is fast-tracked and who is detained, who is granted protection and who is denied, who is allowed to move and who is rendered immobile. Through these processes, prediction becomes governance, and governance becomes a mechanism for the ongoing reproduction of racialized and geopolitical inequality.

NECROPOLITICS: LIFE AND DEATH AT THE BORDER

To understand the stakes of this predictive turn, it is useful to place it in conversation with Achille Mbembe's account of necropolitics. Mbembe (2003)⁷⁴ argues that sovereignty is defined not only by the capacity to foster life, but by the capacity to expose certain populations to death. Necropolitics concerns the creation of 'death-worlds': spaces in which people are subjected to conditions of life that confer upon them the status of the living dead. Border spaces have long functioned in this way (Achieme 2021 and 2022).⁷⁵ What AI and automation alter is how these spaces are organized, extended, and governed. They expand the reach of border power while dispersing the sites at which lethal exposure is produced. For this reason, I use the term *border necrotechnics* to describe the assemblage of technologies, infrastructures, and institutional practices through which exposure, abandonment, and disposability are distributed at and beyond the border.

⁷² Lyon, D., 2007. *Surveillance Studies: An Overview*. Cambridge: Polity Press

⁷³ Jones, R., 2009. Categories, borders and boundaries. *Progress in Human Geography*, 33(2), pp.174–189

⁷⁴ Mbembe, A., 2003. Necropolitics (trans. L. Meintjes). *Public Culture*, 15(1), pp.11–40.

⁷⁵ Achieme, E.T., 2021. Digital racial borders. *American Journal of International Law*, 115(S1), pp.333–338. <https://doi.org/10.1017/aju.2021.52>; Achieme, E.T., 2022. Racial borders. *Georgetown Law Journal*, 110(3), pp.445–510.

Border necrotechnics is also not limited to direct violence. Its force is often indirect, infrastructural, and cumulative. Nixon's concept of slow violence is particularly useful here, as it captures harm that is incremental, attritional, and difficult to narrate as a singular event (Nixon 2011).⁷⁶ For example, people die in the Sonoran desert not because a tower shoots them, but because surveillance intensifies in some areas and redirects them into harsher terrain, leading to an exponential increase of deaths due to environmental exposure since the introduction of smart border technologies (Chambers et al 2021, see also de Leon 2015).⁷⁷ Surveillance towers, aerial systems, sensors, and predictive analytics are often defended as more efficient and more humane than walls or armed patrols. Yet scholars such as Boyce, Chambers, and Lanius have shown that intensified surveillance has contributed to the rerouting of migration journeys into increasingly remote and dangerous terrain, where dehydration, exposure, and injury become more likely (Boyce et al. 2019; Chambers et al. 2021).⁷⁸ The violence here is not only the violence of interception. It is the violence of redirection, where the system reshapes the geography of survival and the choices people have to make as a result. Similarly, in the sunbaked, open air refugee camps along the Aegean islands, people are detained indefinitely not because of a singular decision, but because data systems, administrative bottlenecks, legal exclusions, and remote infrastructures converge to normalize prolonged containment (see also Tazzioli 2024).⁷⁹

⁷⁶Nixon, R., 2011. *Slow Violence and the Environmentalism of the Poor*. Cambridge, MA: Harvard University Press. Gilliom, J., 2001. *Overseers of the Poor: Surveillance, Resistance, and the Limits of Privacy*. Chicago: University of Chicago Press.

⁷⁷Chambers, S.N., Boyce, G.A., Launius, S. and Dinsmore, A., 2021. Mortality, surveillance and the tertiary 'funnel effect' on the U.S.–Mexico border: A geospatial modeling of the geography of deterrence. *Journal of Borderlands Studies*, 36(3), pp.443–468; De León, J., 2015. *The Land of Open Graves: Living and Dying on the Migrant Trail*. Oakland: University of California Press.

⁷⁸Boyce, G.A., Chambers, S.N. and Launius, S., 2019. Bodily inertia and the weaponization of the Sonoran Desert in US boundary enforcement: A GIS modeling of migration routes through Arizona's Altar Valley. *Journal on Migration and Human Security*, 7(1), pp.23–35. <https://doi.org/10.1177/2331502419825610>. See also Chambers, S.N., Boyce, G.A., Launius, S. and Dinsmore, A., 2021. Mortality, surveillance and the tertiary 'funnel effect' on the U.S.–Mexico border: A geospatial modeling of the geography of deterrence. *Journal of Borderlands Studies*, 36(3), pp.443–468

⁷⁹Tazzioli, M., 2024. Confining by choking refugees' lifetime. *Geopolitics*, 29(4), pp.1121–1142.

Border necrotechnics explicitly names not only spectacular acts of violence but also the distributed infrastructures through which some lives are rendered more precarious than others, and, crucially, how these outcomes are operationalized through technical systems rather than solely through sovereign decision. While Mbembe's necropolitics foregrounds the power to expose populations to death (2003),⁸⁰ border necrotechnics attends to the specific mechanisms through which this exposure is enacted, extended, and normalized in contemporary border regimes. It shifts the analytic lens from the moment of sovereign violence to the infrastructures that make such violence possible at scale: databases that flag certain bodies as risky, sensors that redirect movement into hostile terrain, algorithmic systems that pre-sort individuals into categories of suspicion, and administrative platforms that render detention routine, indefinite, and intractable.

More specifically, the 'technics' of border necrotechnics transform how necropolitical power is exercised. Exposure to harm is increasingly produced through dispersed, automated, and often opaque systems that distribute risk across space and time, no longer only the result of visible acts such as shooting, detention, or expulsion (Amoore, 2013; Bigo, 2006; Lyon, 2007).⁸¹ These systems enable a form of governance in which responsibility is diffused across actors, interfaces, and decisions that appear technical rather than political (Pasquale, 2015; Selbst *et al.*, 2019; Kalluri *et al.*, 2023).⁸² Harm is no longer always attributable to a single agent or moment. Instead, harm emerges through the cumulative effects of design choices, data practices, and infrastructural arrangements that quietly shape

⁸⁰ Mbembe, A., 2003. Necropolitics (trans. L. Meintjes). *Public Culture*, 15(1), pp.11–40.

⁸¹ Amoore, L., 2013. *The Politics of Possibility: Risk and Security Beyond Probability*. Durham, NC: Duke University Press; Lyon, D., 2007. *Surveillance Studies: An Overview*. Cambridge: Polity Press; Bigo, D., 2006. Security, exception, ban and surveillance. In D. Lyon (ed.) *Theorizing Surveillance: The Panopticon and Beyond*. Cullompton: Willan Publishing, pp.46–68.

⁸² Frank Pasquale, *The Black Box Society: The Secret Algorithms That Control Money and Information* (Harvard University Press, 2015) Selbst, A.D., Boyd, D., Friedler, S.A., Venkatasubramanian, S. and Vertesi, J. (2019) 'Fairness and abstraction in sociotechnical systems', Proceedings of the Conference on Fairness, Accountability, and Transparency, pp. 59–68. <https://dl.acm.org/doi/10.1145/3287560.3287598> Kalluri, P., Agnew, W., Cheng, M., Owens, K., Soldaini, L. and Birhane, A., 2023. The surveillance AI pipeline. *arXiv preprint*, <https://arxiv.org/abs/2309.15084>. Available at: <https://arxiv.org/abs/2309.15084>, see also Kalluri, P.R., Agnew, W., Cheng, M., Owens, K., Soldaini, L. and Birhane, A., 2025. Computer-vision research powers surveillance technology. *Nature*, 643, pp.73–79. <https://doi.org/10.1038/s41586-025-08972-6>

the conditions under which people move and survive (Mbembe, 2003; Nixon, 2011; Molnar, 2024; Sánchez-Monedero and Dencik, 2022).⁸³ Border necrotechnics therefore draws attention to the ways in which technical systems participate in decisions about whose movement is tolerated, whose body is rendered suspicious, whose suffering becomes administratively invisible, and whose death can be treated as collateral. It captures how these determinations are increasingly embedded within predictive models, risk scores, and surveillance architectures that operate continuously, often beyond the immediate site of the border itself. What is distinct, and particularly harmful, about this configuration is that it simultaneously reproduces necropolitical logics, while explicitly doing so in ways that are not immediately obvious and that are normalized and difficult to contest.

The expansion of AI and digital technologies at the border is also inseparable from political economy. States do not and cannot build digital borders alone. Instead, they rely on a network of private contractors, defense firms, biometric companies, cloud providers, data brokers, and start-ups eager to turn ‘the problem of migration’ into market demand (Molnar 2024).⁸⁴ This is what Miller (2019) and others⁸⁵ have describes as the growth of a lucrative border-industrial complex: the deepening entanglement of state enforcement agendas with corporate profit. The border techno-space is attractive to the private sector precisely because it offers an environment where urgency is politically manufactured, legal oversight is often weak, and experimentation can be justified in the name of national security. Pilot programs such as the EU-funded iborderCTRL project, a so-called automatic lie detector for identifying deception at the border (Sánchez-Monedero and Dencik 2022),⁸⁶ can be launched on precarious

⁸³ Mbembe, A., 2003. Necropolitics (trans. L. Meintjes). *Public Culture*, 15(1), pp.11–40.; Nixon, R., 2011. *Slow Violence and the Environmentalism of the Poor*. Cambridge, MA: Harvard University Press.; Molnar, P., 2024. *The Walls Have Eyes: Surviving Migration in the Age of Artificial Intelligence*. New York: The New Press.; Sánchez-Monedero, J. and Dencik, L., 2022. The politics of deceptive borders: ‘biomarkers of deceit’ and the case of iBorderCtrl. *Information, Communication & Society*, 25(3), pp.413–430

⁸⁴ Molnar, P., 2024. *The Walls Have Eyes: Surviving Migration in the Age of Artificial Intelligence*. New York: The New Press

⁸⁵ Miller, Todd. *Empire of borders: The expansion of the US border around the world*. Verso Books, 2019. See also Douglas, K. M. and Sáenz, R. (2013) ‘The criminalization of immigrants & the immigration-industrial complex’. *Daedalus*, 142(3), pp. 199–227.

⁸⁶ Sánchez-Monedero, J. and Dencik, L., 2022. The politics of deceptive borders: ‘biomarkers of deceit’ and the case of iBorderCtrl. *Information, Communication & Society*, 25(3),

populations with limited avenues for redress, rendering the entire border space a technological testing ground (Loewenstein 2023, Molnar 2019, Achiume 2021).⁸⁷ And once these technologies are sufficiently tested on mobile or otherwise captive and occupied populations, they are refined, branded, and sold elsewhere (Molnar 2021; Loewenstein 2023).⁸⁸

Without directly confronting these profit structures, it is difficult to understand why harmful technologies persist even when their failures are well documented. The issue is not simply that policymakers misunderstand technology, or that systems are imperfectly designed. Rather, powerful actors benefit materially and politically from their expansion, with a vested interest to grow the border industrial complex. Within the broader assemblage of border necrotechnics, surveillance infrastructures, biometric systems, and predictive tools are simultaneously mechanisms of control as well as sites of accumulation (Bhattacharyya, G., 2018; See also Miller 2019).⁸⁹ Contracts are awarded, data is extracted, and new markets are created around the very management of mobility, transforming the governance of human movement into a profitable enterprise.

The harms produced by border technologies are therefore not incidental by-products. Instead, they are entangled with the logics that sustain the system itself. The precariousness of people on the move generates demand for ever more sophisticated tools of monitoring, classification, and containment, while the data derived from these encounters feeds back into the development of new systems. Human vulnerability becomes both the justification for intervention and the raw material for innovation. Border necrotechnics thus names both the infrastructural distribution of harm as well as the political economy through which that harm is rendered productive,

pp.413-430.

⁸⁷ Loewenstein, A., 2024. *The Palestine laboratory: How Israel exports the technology of occupation around the world*. Verso Books. Molnar, P., 2019. Technology on the margins: AI and global migration management from a human rights perspective. *Cambridge International Law Journal*, 8(2), pp.305-330; Achiume, E.T., 2021. Digital racial borders. *American Journal of International Law*, 115(S1), pp.333-338. <https://doi.org/10.1017/aju.2021.52>

⁸⁸ Molnar, P., 2021. Surveillance sovereignty: Migration management technologies and the politics of privatization. In *Migration, security, and resistance* (pp. 66-82). Routledge. Loewenstein, A., 2024. *The Palestine laboratory: How Israel exports the technology of occupation around the world*. Verso Books.

⁸⁹ Bhattacharyya, G., 2018. *Rethinking Racial Capitalism: Questions of Reproduction and Survival*. London: Rowman & Littlefield; Miller, T., 2019. *Empire of Borders: The Expansion of the US Border Around the World*. London: Verso Books.

where exposure, containment, and even death are folded into circuits of value that make the expansion of the border not only possible, but profitable.

THE CONTRIBUTION OF THIS BOOK

This book attempts to make three core interventions. First, it argues that AI and automation are transforming border governance from a reactive regime into an anticipatory one. Borders increasingly operate not by simply just responding to events, but also by predicting and pre-empting them. This orientation aligns migration control with broader trends in predictive policing and algorithmic governance, but with especially high stakes because the consequences can include detention, deportation, denial of asylum, or exposure to death. Second, it argues that these systems are not merely flawed implementations of neutral tools. They are structured by racialized histories and political choices. AI at the border does not accidentally reproduce inequality, but is explicitly built atop the categories, datasets, and institutional priorities through which inequality has long been enforced. To analyze border technology without race is therefore to miss its central logic (Achiume 2021).⁹⁰ Third, it argues that technological harm at the border cannot be understood apart from the political economy that drives it. Private actors are not peripheral vendors but central architects of contemporary border systems. Their influence helps explain not only which technologies are adopted, but why harmful ones persist.

The chapters that follow develop these claims in greater depth. Chapter 2 examines how AI-enabled border systems reproduce racial hierarchies and logics of othering to argue that the digital border is a racial project. Chapter 3 explores the racial and carceral systems and advances an account of borders as a site of increasingly automated confinement. Chapter 4 turns to the border-industrial complex and the role of corporate power, procurement, and digital colonialism. Chapter 5 examines law and governance, showing how opacity, trade secrecy, extraterritoriality, and weak oversight enable harm. Chapter 6 concludes by asking what futures beyond border necrotechnics might look like, drawing on abolitionist and decolonial approaches to migration justice.

The border is no longer a static, physical space. Instead, it is a sprawling and adaptive infrastructure of sorting, prediction, and control, operating

⁹⁰ Achiume, E.T., 2022. Racial borders. *Georgetown Law Journal*, 110(3), pp.445–510.

in deserts and camps, at checkpoints and consulates, in databases and procurement contracts. Through increasingly digitized means, borders follow people across space and over time. The systems examined in this book decide whose mobility is imaginable, whose suffering is legible, and whose life can be subjected to prolonged uncertainty, containment, or exposure. This is why the criminalization of mobility in the age of AI matters beyond migration alone. Border technologies do not remain neatly at the border. The models, infrastructures, and rationalities developed there travel outward into policing, welfare systems, public space, and everyday governance. The border is a laboratory not only because it is a space of exception (Molnar 2020, see also Agamben 2005),⁹¹ but also because it reveals broader trends, revealing how technological power and state violence converge.

To study the border today, then, is to study the future of governance itself. And as author William Gibson reminds, that future is already unevenly distributed (see also Yoshinaga, Guynes, Canavan 2022).⁹²

⁹¹ Molnar, P., 2020. *Technological Testing Grounds: Migration Management Experiments and Reflections from the Ground Up*. Brussels/Toronto: EDRi and Refugee Law Lab, York University.; Agamben, G., 2005. *State of Exception* (trans. K. Attell). Chicago: University of Chicago Press.

⁹² Yoshinaga, I., Guynes, S. and Canavan, G. eds., 2022. *Uneven futures: Strategies for community survival from speculative fiction*. MIT Press.

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Techno-racial Borders: Automated Discrimination in the Modern Digital Security State

Abstract This chapter examines how AI-enabled border technologies reproduce racial hierarchies and logics of Othering. Drawing on the work of Tendayi Achiume, Achille Mbembe, Stuart Hall, Simone Browne, and Ruha Benjamin, this chapter argues that AI systems do not simply reflect racial inequalities, they *automate* them at scale, under the guise of objectivity. I argue that AI also gives aesthetic cover to racialized bordering practices. It converts political choices of who is welcomed and who is feared into technical decisions, obscuring accountability. The digital border is not neutral. It is a racialized project that mobilizes technology to sustain unequal global mobility regimes. To understand the harms of AI at borders, we must understand how racial narratives, historical inequalities, and global power imbalances shape who is allowed to move and who is rendered immobile. AI thereby becomes a vehicle for the ongoing colonial management of mobility.

Keywords Racial capitalism • Automated othering • Digital bordering
• Algorithmic accountability • Global mobility regimes



Burned out watch tower sits along the road to Ramallah, Occupied West Bank | P. Molnar | 2023

In the hills of the Occupied West Bank, where the roads narrow into twisted concrete and metal, the landscape is punctuated by barriers: walls, turnstiles, cameras mounted above eye level. The air carries a different kind of tension here, less expansive than the Sonoran desert, but all the more suffocating. A red light flickers above a metal gate. A camera tilts downward, then back again. Movement is slow, regulated, measured in shuffling steps. Often there are automatic machine guns strapped onto the turnstiles.

Amal slowly steps forward. Her phone vibrates softly in her hand. Must be her daughter, checking in when, or if, she is coming home today. She has been waiting for nearly an hour, shifting her weight from one foot to the other, watching others pass through the scanner, some waved forward, others turned back without explanation. Amal presses her finger against the glass that records her fingerprint, noticing a bit of leftover dirt under her nail from the peppers she was planting in her garden earlier that day. Somewhere, a database registers her presence, her biometric ID card, her past crossings, the routes she has taken, her social media, the times she has been stopped. Today, the gate remains closed. Amal steps back. She does not get a reason why.

Elsewhere, hundreds of kilometers away, another system is also watching—and acting. Since the start of the Gaza Genocide in October 2023 (International Court of Justice 2024),¹ Israeli military operations have increasingly incorporated artificial intelligence systems with benign names like Lavender, Gospel, and Where is Daddy that sort through vast quantities of surveillance data like phone records, movement patterns, metadata, classifying individuals and locations into categories of threat. Systems reported to generate targets at scale collapse the distance between data and violence, enabling strikes to be selected and executed with unprecedented speed. In what many scholars, UN experts, and human rights organizations have described as a technologically enabled genocide (Albanese 2024; Rigot 2024),² these systems are embedded within the machinery of destruction itself, where patterns of life are transformed into targets, and the threshold for lethal force is mediated through algorithmic classification.

Borders in Occupied Palestine do not merely block movement. They filter, score, predict, and act, distributing life and death. In the West Bank, this infrastructure fragments daily life into zones of permission and denial, where access to work, family, and care is mediated through opaque systems that cannot be appealed. Here, the violence is often slow and cumulative: movement is constrained, time is stolen, futures are deferred, and bodies are subjected to ongoing precarity, where the capacity to live is continuously eroded. In Gaza, this same infrastructural logic operates at a different register, where classification collapses into lethality. Data-driven systems now drive annihilation, transforming individuals into entries in an automated targeting architecture, where probabilities are translated into strikes, and where the distinction between identification and execution becomes increasingly compressed. If in the

¹ International Court of Justice, 2024. *Application of the Convention on the Prevention and Punishment of the Crime of Genocide in the Gaza Strip (South Africa v. Israel)*, Provisional Measures Order, 26 January 2024. The Hague: ICJ. Available at: <https://www.icj-cij.org/case/192>

² Rigot, A., 2024. The weaponization of things: Israel's techno-violence, a litmus test for technologists. *Tech Policy Press*, 4 November. Available at: <https://www.techpolicy.press/the-weaponization-of-things-israels-technoviolence-a-litmus-test-for-technologists/> Albanese, F., 2024. *Anatomy of a Genocide: Report of the Special Rapporteur on the Situation of Human Rights in the Palestinian Territories Occupied since 1967*. UN Doc. A/HRC/55/73. Geneva: UN Human Rights Council. Available at: <https://www.ohchr.org/en/documents/thematic-reports/ahrc5573-anatomy-genocide-report-special-rapporteur-situation-human>; see also UN Human Rights Experts, 2024. Gaza: UN Experts Deplore Use of Purported AI to Commit 'Domicide' in Gaza, Call for Reparative Approach to Rebuilding. Geneva: OHCHR, 15 April 2024. Available at: <https://www.ohchr.org/en/press-releases/2024/04/gaza-un-experts-deplore-use-purported-ai-commit-domicide-gaza-call>

*West Bank the system governs through the management of life, in Gaza, it governs through the orchestration of death.*³

To understand how digital technologies reshape contemporary border governance, it is necessary to begin from a point that is still treated as secondary, or even external, to much of technological analysis: namely, that since their inception, borders themselves have always been structured through racialized logics of differentiation (Achiume 2021).⁴ Centering racial analysis is not simply a claim about the unequal effects of border enforcement, nor about the presence of bias within particular systems. Rather, it is about visibilizing the underlying organization of mobility in the modern world, in which the ability to move, to remain, or to belong is distributed across populations in ways that reflect longer histories of empire, apartheid, colonization, and global inequality. Therefore, any introduction of technologies into border governance does not occur within a neutral or abstract space. Rather, it occurs within a field that is already differentiated, in which certain forms of movement are rendered ordinary while others are persistently framed as excessive, disorderly, and threatening (Mezzadra and Neilson 2013).⁵ To speak of the digital border, then, is not to describe a break with earlier forms of control, but to rather trace the genealogy (Foucault 1977)⁶ of these practices to examine how existing distinctions are translated into new technical forms which remain deeply entangled with the histories from which they emerge.

This perspective is captured with clarity in Tendayi Achiume's work on racial borders (2022),⁷ which foregrounds the extent to which contemporary migration regimes operate as mechanisms for preserving global racial hierarchy. The restriction of movement from Majority World to the west cannot be understood solely in terms of sovereignty or security. Rather, it reflects a broader system in which the mobility of certain populations, particularly those demarcated and categorized as African, Arab, Muslim, Indigenous, or otherwise non-western, is systematically constrained in

³This vignette is a composite based on a research trip to the Occupied West Bank in the spring of 2023.

⁴Achiume, E.T., 2022. Racial borders. *Georgetown Law Journal*, 110(3), pp.445–510.

⁵Mezzadra, S. and Neilson, B., 2013. *Border as Method, or, the Multiplication of Labor*. Durham: Duke University Press.

⁶Foucault, Michel. "Nietzsche, Genealogy, History." In *Language, Counter-Memory, Practice*, edited by Donald F. Bouchard, 139–164. Cornell University Press, 1977.

⁷Achiume, E.T., 2022. Racial borders. *Georgetown Law Journal*, 110(3), pp.445–510.

ways that echo colonial patterns of coloniality and exclusion (Adamson and Thiollet, 2025; Lewicki, 2024; Rahman and Sayed 2025; Moffette, D. and Walters, W., 2018).⁸ These constraints are not incidental. Rather, they are constitutive of how the border functions, shaping who is permitted to move and under what conditions. This deep inequality is embedded within the very categories through which mobility is governed. For example, the distinction between a ‘refugee’ and an ‘economic migrant’ is often presented as a neutral administrative classification and as rigid legalistic categorization that cannot be deviated from (see also Yarris, K. and Castañeda, H. 2015),^{9,10} In practice, however, these definitions are shaped by geopolitical considerations that render certain forms of displacement more legible than others. Similarly, the differential treatment of visa applicants across nationalities (e.g., see Molnar and Gill 2018)¹¹ reflects not simply administrative convenience, but also an underlying hierarchy of trust and suspicion, in which some bodies are presumed credible, while others must continually justify their presence.

This chapter examines how border technologies reproduce racial hierarchies and logics of Othering. Digital borders do not simply reflect racial inequalities. Instead, they automate them at scale, under the guise of

⁸ Fiona B. Adamson, Hélène Thiollet, The colonial migration state, *Political Geography*, Volume 120, 2025, 103270, ISSN 0962-6298, Aleksandra Lewicki, Coloniality, Race, and Europeanness: Britain’s Borders after Brexit, *International Political Sociology*, Volume 18, Issue 3, September 2024, olac025, <https://doi.org/10.1093/ips/olac025>; Rahman, K.M. and Sayed, N.B., 2025. Colonial Legacies in Cross-Border Migration Trajectories: South Asian Perspectives. In *Handbook of Migration, International Relations and Security in Asia* (pp. 1-19). Singapore: Springer Nature Singapore. Moffette, D. and Walters, W., 2018. Flickering presence: Theorizing race and racism in the governmentality of borders and migration. *Studies in Social Justice*, 12(1), pp.92-110.

⁹ Yarris, K. and Castañeda, H., 2015. Special issue: Discourses of displacement and deservingness: Interrogating distinctions between ‘economic’ and ‘forced’ migration. *International Migration*, 53(3), pp.64–69. <https://doi.org/10.1111/imig.12170>

¹⁰ This is not to say that certain legal categories should be elided, nor that for example those seeking asylum or refugees are not deserving of special protection. Rather, all too often, rigidity in categorization precludes holistic assessments and recognition of the importance of context and complexity in the rich lives of human beings, many of whom transcend legal categories or exist across their multiplicities. See also Robertson, S., 2019. Status-making: Rethinking migrant categorization. *Journal of Sociology*, 55(2), pp.219-233.

¹¹ Petra Molnar and Lex Gill, Bots at the Gate: A Human Rights Analysis of Automated Decision -Making in Canada’s Immigration and Refugee System, University of Toronto International Human Rights Program and the Citizen Lab, Munk School of Global Affairs, September 2018.

scientific objectivity. This chapter begins by situating contemporary border technologies within colonial governance architectures. Modern migration control inherits racialized logics that once underpinned empire: surveillance of colonized populations, biometric registration systems, collective punishment, and restrictions on freedom of movement (Breckenridge, 2014; Browne, 2015; Mongia, 201).¹² Today's AI-driven systems replicate these dynamics, embedding racial profiling into datasets, risk scores, and biometric templates (Benjamin, 2019; Buolamwini and Gebru, 2018; Taylor, 2017).¹³ This chapter also explores how racialization and securitization work together (El Anany 2020; Ibrahim, M. 2005).¹⁴ The figure of the 'migrant' has long been framed through the media and policy discourse as a symbol of chaos, disorder, or invasion (e.g., see Hall et al, 1978, on the theory of 'moral panic').¹⁵ AI operationalizes these narratives: risk-scoring tools sort people on the move by perceived 'danger,' autonomous surveillance systems expand the spatial reach of the security state, and biometric infrastructures map racialized bodies into permanent suspect categories.

AI also gives aesthetic cover to racialized bordering practices (see also Achiume 2021),¹⁶ the technological veneer of objectivity and neutrality that AI systems provide to racialized political decisions, making discrimination appear as computation and thereby foreclosing accountability. It converts political choices of who is welcomed and who is feared into technical decisions, obscuring accountability (Amoore, 2020; Pasquale, 2015;

¹² Breckenridge, K., 2014. *Biometric state*. Cambridge University Press; Browne, S. (2015) *Dark matters: on the surveillance of blackness*. Durham: Duke University Press; see also Mongia, R.V. (2018) *Indian migration and empire: a colonial genealogy of the modern state*. Durham: Duke University Press.

¹³ Buolamwini, J. and Gebru, T., 2018, January. Gender shades: Intersectional accuracy disparities in commercial gender classification. In *Conference on fairness, accountability and transparency* (pp. 77-91). PMLR.; Taylor, L. (2017) 'What is data justice? The case for connecting digital rights and freedoms globally', *Big Data & Society*, 4(2).

¹⁴ El-Anany, N., 2020. *(B)ordering Britain: Law, Race and Empire*. Manchester: Manchester University Press.. Ibrahim, M. (2005) 'The Securitization of Migration: A Racial Discourse'. *International Migration*, 43(5), pp. 163–187.

¹⁵ Hall, S., Critcher, C., Jefferson, T., Clarke, J. and Roberts, B. (1978) *Policing the crisis: mugging, the state, and law and order*. London: Macmillan.

¹⁶ Achiume, E.T. (2021) Racial and xenophobic discrimination and the use of digital technologies in border and immigration enforcement. Report of the Special Rapporteur on Contemporary Forms of Racism, Racial Discrimination, Xenophobia and Related Intolerance. UN Doc. A/HRC/48/76. Geneva: United Nations Human Rights Council.

Christin 2020, see also Rouvroy and Berns, 2013).¹⁷ But the digital border is never neutral. Rather, it is a racialized project that mobilizes technology to sustain unequal global mobility regimes. This chapter concludes by positioning racialization as a fundamental axis of digital borders. To understand the harms of AI at borders, we must understand how racial narratives, historical inequalities, and global power imbalances shape who is allowed to move and who is rendered immobile. AI and other digital technologies thereby become a vehicle for the ongoing colonial management of mobility.

To situate these dynamics historically, it is useful to first turn to Franz Fanon's account of the colonial world, in which space is divided not only territorially but ontologically. For Fanon, the colonial order is structured through a fundamental distinction between those who inhabit the 'zone of being' and those relegated to the 'zone of non-being' (1952),¹⁸ a distinction that is maintained in the present day through systems of surveillance, restriction, and control. Movement, within this framework, becomes one of the primary mechanisms through which this division is enforced. To move freely is to be recognized as fully human; to be stopped, documented, or confined is to be positioned otherwise: less-than-human, manageable, deportable, and less worthy of life (see also Agamben 1998, Mbembe 2003).¹⁹ Fanon's formulation anticipates the contemporary organization of mobility, in which the freedom to move is distributed in ways that continue to reflect this underlying division. Neo colonial governance continues to function through the persistence of its spatial logics, rearticulated through modern border regimes that regulate movement through visas, biometric systems, and risk assessments (Nyabola 2023).²⁰

¹⁷Amoore, L., 2020. *Cloud ethics: Algorithms and the attributes of ourselves and others*. Duke University Press. Rouvroy, A. and Berns, T., 2013. Algorithmic governmentality and prospects of emancipation: Disparateness as a precondition for individuation through relationships?. *Réseaux*, 177(1), pp.163-196. For a critique of the framing of "the black box" see Christin, A., 2020. The ethnographer and the algorithm: Beyond the black box. *Theory and Society*, 49(5), pp.897-918

¹⁸Fanon, F., 2008 [1952]. *Black Skin, White Masks* (trans. R. Philcox). New York: Grove Press.

¹⁹Agamben, G., 1998. *Homo Sacer: Sovereign Power and Bare Life* (trans. D. Heller-Roazen). Stanford: Stanford University Press; Mbembe, A., 2003. Necropolitics (trans. L. Meintjes). *Public Culture*, 15(1), pp.11-40.

²⁰Nyabola, N., 2023. *Digital Identities and Border Cultures: The Limits of Technosolutionism in the Management of Human Mobility*. Washington, DC: Atlantic Council Digital Forensic Research Lab (DFRLab). Available at: <https://www.atlanticcouncil.org/in-depth-research-reports/report/digital-identities/>

These systems explicitly reproduce colonial categories, assigning different values to different forms of movement based on a set of inherited assumptions about risk, legitimacy, and belonging, relegating the Majority World once again to the ‘zone of non-being’ (Mbembe 2003).²¹ However, this distinction is not static but rather, it is continually produced and reproduced through legal, administrative, and technological practices that interpret movement in relation to broader narratives about security and order (De Genova 2002, Walters 2006, Bosworth and Guild 2008).²²

It is here that the relationship between racialization and securitization becomes particularly significant. The construction of social problems often relies on the production of figures that come to embody broader anxieties about disorder and instability (Hall et al. 1978).²³ These figures are rarely neutral. Instead, they are shaped by racialized associations that link particular populations to threat, even in the absence of explicit reference to race. Within contemporary migration discourse, the figure of the ‘migrant’ frequently occupies this position, serving as a site onto which concerns about economic precarity, cultural change, and political instability are projected. Politicians across the world routinely refer to mobile populations as ‘threats’ or ‘frauds,’ speak of ‘floods’ or ‘waves’ of refugees ‘flowing across borders, and sometimes even refer to people-on-the-move as ‘vectors of disease’ or ‘vermin.’ (Esbaugh-Soha 2021, see also Kainz 2016; Cohen 2018).²⁴ These are not accidental raving pronouncements (as much as it

²¹ Mbembe, A., 2003. Necropolitics (trans. L. Meintjes). *Public Culture*, 15(1), pp.11–40.

²² De Genova, N.P., 2002. Migrant ‘illegality’ and deportability in everyday life. *Annual Review of Anthropology*, 31, pp.419–447. Walters, W., 2006. Border/control. *European Journal of Social Theory*, 9(2), pp.187–203. Bosworth, M. and Guild, M., 2008. Governing through migration control: Security and citizenship in Britain. *The British Journal of Criminology*, 48(6), pp.703–719. <https://doi.org/10.1093/bjc/azn059>

²³ Hall, S., Critcher, C., Jefferson, T., Clarke, J. and Roberts, B., 1978. *Policing the Crisis: Mugging, the State, and Law and Order*. London: Macmillan.

²⁴ Esbaugh-Soha, M. and Barnes, K., 2021. The immigration rhetoric of Donald Trump. *Presidential Studies Quarterly*, 51(4), pp.781–801. <https://doi.org/10.1111/psq.12741>. Cohen, R., 2018. How democracy became the enemy: In Hungary and Poland, the liberal West used to be the promised land. Not anymore. *New York Times*, 6 April. Available at: <https://www.nytimes.com/2018/04/06/opinion/sunday/orban-hungary-kaczynski-poland.html> Kainz, L., 2016. People can’t flood, flow or stream: Diverting dominant media discourses on migration. *Border Criminologies* (University of Oxford Faculty of Law blog), 8 February. Available at: <https://www.law.ox.ac.uk/research-subject-groups/centre-criminology/centreborder-criminologies/blog/2016/02/people-cant>

may sometimes appear these days) but rather the deep political work of Othering.

These projections shape the design of policies, the allocation of resources, and the development and deployment of border technologies. Predictive systems, risk-scoring models, and automated classification tools promise to identify patterns that may not be immediately visible to human observers, allowing for the anticipation of movement before it occurs. These systems are often framed as objective, grounded in data rather than judgment. Yet the data on which they rely is never neutral (Noble, 2018; O’Neil 2017, Gebru 2020).²⁵ The categories through which risk is assessed such as nationality, travel history, or behavioral indicators, function as proxies through which broader patterns of differentiation are encoded into technical systems. These proxies allow race to operate without always being explicitly named, producing outcomes that may appear neutral while reproducing existing hierarchies (for a discussion on gender dimensions see also Criado-Perez 2019).²⁶ Furthermore, when decisions are framed as technical outputs, they can appear as detached from the social and political contexts in which they are produced (see also Miceli et al. 2020).²⁷ The question of who is being classified as risky, and why, is displaced by questions about model accuracy and system performance. In this way, digital border technologies provide both a new set of tools for border governance as well as a new language through which that governance is justified, further obscuring the racial exclusion inherent to global bordering regimes.

To understand the implications of this development, it is therefore necessary to examine how these systems inherit and transform the categories through which mobility has long been organized.

²⁵ Gebru, T., 2020. Race and gender. In M.D. Dubber, F. Pasquale and S. Das (eds.) *The Oxford Handbook of Ethics of AI*. Oxford: Oxford University Press, pp.252–269. <https://doi.org/10.1093/oxfordhb/9780190067397.013.16> ; O’Neil, C., 2016. *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. New York: Crown Publishers; Noble, S.U., 2018. *Algorithms of Oppression: How Search Engines Reinforce Racism*. New York: NYU Press.

²⁶ Criado Perez, C., 2019. *Invisible Women: Exposing Data Bias in a World Designed for Men*. London: Chatto & Windus.

²⁷ Miceli, M., Schuessler, M. and Stark, T., 2020. Between subjectivity and imposition: Power dynamics in data annotation for computer vision. *Proceedings of the ACM on Human-Computer Interaction*, 4(CSCW2), pp.1–26. <https://doi.org/10.1145/3415183>

DATA, CLASSIFICATION, AND THE AUTOMATION OF RACIALIZED SUSPICION

Contemporary border regimes are already structured through racialized distinctions that precede the introduction of AI and other digital bordering technologies. Colonial and authoritarian regimes have long relied on systems of classification to render populations legible, governable, and divisible, from the British-imposed Kipande system in Kenya (Weinzberg 2020)²⁸ which required men to carry passbooks around their neck to regulate their movement and labor, to the role of IBM punch-card systems in facilitating the bureaucratic categorization and persecution of Jewish communities during the Holocaust in Nazi Germany (Black 2012).²⁹ Contemporary border technologies extend these same sorting and classification logics into digital form, where biometric databases, risk scores, and algorithmic profiling reproduce earlier practices of sorting and control, now operating at greater scale, speed, and opacity.

Yet digital technologies do not merely reflect biases and racialized distinctions but rather participate in the very reorganization of classification itself. In this respect, the growing literature on algorithmic governance is instructive, particularly in its insistence that digital systems cannot be understood as neutral tools, but as sites in which social and political relations are rearticulated in technical form (Amoore 2006, 2013; Kitchin 2017).³⁰ Data is not just an external input into border governance, but rather one of its primary products. Every interaction at the border generates records that are subsequently stored, categorized, and made available for analysis. Over time, these records accumulate into datasets that appear to offer an empirical account of how movement occurs and how risk is distributed. Yet what these datasets capture is not movement in the abstract. They capture movement as it has already been interpreted through systems of enforcement that are themselves structured by prior assumptions about who is likely to be suspicious (Lyon 2007; Bigo 2006; Rahman 2016).³¹

²⁸Weitzberg, K., 2020. Biometrics, race making, and white exceptionalism: The controversy over universal fingerprinting in Kenya. *The Journal of African History*, 61(1), pp.23-43.

²⁹Edwin Black, IBM and the Holocaust: The Strategic Alliance Between Nazi Germany and America's Most Powerful Corporation (Expanded Edition, Dialog Press, 2012).

³⁰Coletta, C. and Kitchin, R., 2017. Algorithmic governance: Regulating the 'heartbeat' of a city using the Internet of Things. *Big Data & Society*, 4(2), pp.1-16.

³¹Lyon, D., 2007. *Surveillance Studies: An Overview*. Cambridge: Polity Press; Bigo, D., 2006. Security, exception, ban and surveillance. In D. Lyon (ed.) *Theorizing*

Data can therefore be understood, following Ruha Benjamin, as a site of encoded inequality, where historical patterns of discrimination are sedimented within technical infrastructures and rendered available for future use (Benjamin 2019).³² Data may not only contain errors or biases, but it also reflects the conditions under which it was produced. When these conditions are shaped by racialized practices of surveillance and control, the resulting datasets cannot be treated as neutral representations of reality. They are, rather, records of a particular ways of seeing (see also Johns 2013).³³ A way of seeing that is already oriented toward managing, tracking, and disposing of certain bodies, certain routes, and certain forms of movement over others (Noble 2018, Macklin, 2005 Nyabola 2023).³⁴ Algorithmic systems in particular operate by identifying correlations within data, detecting regularities that can be used to generate predictions about future behavior. In the context of border governance, this may involve assessing the likelihood that an individual will overstay a visa, that a traveler presents a security risk, or that a particular route is likely to be used for unauthorized crossing. These assessments are presented as forward-looking, grounded in scientific and statistical reasoning rather than subjective judgment (e.g., see literature on automation bias, or the assumption that a decision rendered by an automated system is somehow more objective and trustworthy than a decision made by a human, see for example Mosier and Skitka 1999; Alon-Barkat and Busuioc 2023; Manzey, D., Reichenbach and Onnasch 2012).³⁵ Yet they remain deeply dependent

Surveillance: The Panopticon and Beyond. Cullompton: Willan Publishing, pp.46–68; Rahman, Z., 2016. Dangerous data: The role of data collection in genocides. *The Engine Room*, 21 November. Available at: <https://www.theengineroom.org/dangerous-data-the-role-of-data-collection-in-genocides/>

³² Benjamin, R., 2019. *Race After Technology: Abolitionist Tools for the New Jim Code*. Medford, MA: Polity Press.

³³ Johns, F., 2017. Data, detection, and the redistribution of the sensible in international law. *American Journal of International Law*, 111(1): 57

³⁴ Macklin, A., 2005. Disappearing refugees: Reflections on the Canada–US Safe Third Country Agreement. *Columbia Human Rights Law Review*, 36(2), pp.365–426; Macklin, A., 2005. Disappearing refugees: Reflections on the Canada–US Safe Third Country Agreement. *Columbia Human Rights Law Review*, 36(2), pp.365–426; Nyabola, N., 2023. *Digital Identities and Border Cultures: The Limits of Technosolutionism in the Management of Human Mobility*. Washington, DC: Atlantic Council Digital Forensic Research Lab (DFRLab). Available at: <https://www.atlanticcouncil.org/in-depth-research-reports/report/digital-identities/>

³⁵ Mosier, K.L. and Skitka, L.J., 1999. Automation use and automation bias. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 43(3), pp.344–348. <https://>

on the data from which they are derived, and therefore on the social and political conditions that shaped that data and its interpretation in the first place (Amoore 2013; Pasquale 2015).³⁶

The consequence of this dependence is that past patterns of enforcement are projected onto future behavior. For example, if certain populations have historically been subject to heightened surveillance, they will appear more frequently within datasets associated with risk (see also Pruss et al 2024).³⁷ Predictive systems trained on this data will then identify these populations as more likely to be risky, thereby justifying further surveillance. What emerges is a recursive dynamic in which suspicion is continually reproduced, not because it is inherently present, but because it has been repeatedly recorded. This dynamic resonates with what scholars of predictive policing have identified as feedback loops, in which the outputs of a system become the inputs for its future iterations, thereby reinforcing existing patterns of inequality (Lum and Isaac 2016; Richardson, Schultz, and Crawford 2019).³⁸

This recursive logic also complicates the notion of bias. Bias, in its conventional sense, implies a deviation from neutrality (a neutrality that is, in and of itself, perceived to be attainable), a distortion that can be corrected

doi.org/10.1177/154193129904300346. Alon-Barkat, S. and Busuioc, M., 2023. Human-AI interactions in public sector decision making: ‘Automation bias’ and ‘selective adherence’ to algorithmic advice. *Journal of Public Administration Research and Theory*, 33(1), pp.153–169. <https://doi.org/10.1093/jopart/muac007> Manzey, D., Reichenbach, J. and Onnasch, L., 2012. Human performance consequences of automated decision aids: The impact of degree of automation and system experience. *Journal of Cognitive Engineering and Decision Making*, 6(1), pp.1–31. <https://doi.org/10.1177/1555343411433844>

³⁶Amoore, L., 2013. *The Politics of Possibility: Risk and Security Beyond Probability*. Durham, NC: Duke University Press; Pasquale, F., 2015. *The Black Box Society: The Secret Algorithms That Control Money and Information*. Cambridge, MA: Harvard University Press.

³⁷Pruss, D. and Molnar, P., 2024. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5017321 https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5017321. Pruss, Dasha and Pullen-Blasnik, Hannah and Stevens, Nikki and Rahman, Shakeer and Belitz, Clara and Stapleton, Logan and Dharmaraj, Mallika G. and Aizeki, Mizue and Molnar, Petra and Pinch, Annika and Ryan, Nathan and Lima, Thallita and Widder, David Gray and Tiwari, Amiya and Sexton, Jason S. and Nunes, Pablo and Zhāngsūn Brown, Ly Xīnzhèn, P., *Prediction and Punishment: Critical Report on Carceral AI*. Cambridge, MA: Berkman Klein Center for Internet & Society, Harvard University. Available at: <https://carceral-ai.com>

³⁸Lum, K. and Isaac, W., 2016. To predict and serve? *Significance*, 13(5), pp.14–19; Richardson, R., Schultz, J.M. and Crawford, K., 2019. Dirty data, bad predictions: How civil rights violations impact police data, predictive policing systems, and justice. *New York University Law Review Online*, 94, pp.192–233.

through better data or improved models. What is at stake here, however, is not deviation but reproduction (e.g., see Miceli et al. 2022).³⁹ Because the system is actually functioning as designed (see Jones-Jang and Park 2023),⁴⁰ identifying patterns within data and using them to inform decisions. However, the patterns it identifies are themselves products of unequal social relations, and therefore cannot be disentangled from them (Benjamin 2019; Eubanks 2018).⁴¹ Automated decision-making in this context does not simply replicate racial inequality. It reinforces it, rendering it durable across time, allowing patterns established under one set of conditions to continue shaping decisions under another. This ossification is particularly significant in the context of border governance, where decisions often have long-term consequences for individuals' ability to move, work, and seek protection (Molnar 2024).⁴²

Simone Browne's work on racialized surveillance provides a useful framework for situating this process within a longer historical trajectory. Browne traces how systems of observation have historically been used to monitor and regulate Black bodies, from the surveillance of enslaved populations to contemporary policing practices (Browne 2015).⁴³ What unites these systems is not simply their function, but rather their orientation, the way in which they direct attention toward certain bodies while rendering others relatively invisible. Automated border technologies extend this orientation. Where earlier systems relied on direct observation, contemporary systems operate through data, allowing for the identification of patterns that may not be immediately perceptible. This abstraction can create the impression of objectivity, as decisions appear to emerge from technical processes rather than human judgment (Gillespie 2016;

³⁹ Miceli, M., Posada, J. and Yang, T., 2022. Studying up machine learning data: Why talk about bias when we mean power? *Proceedings of the ACM on Human-Computer Interaction*, 6(GROUP), Article 34, pp.1–14. <https://doi.org/10.1145/3492853>

⁴⁰ Jones-Jang and Park 2023. How do people react to AI failure? Automation bias, algorithmic aversion, and perceived controllability. *Journal of Computer-Mediated Communication*, 28(1), zmac029, pp.1–8. <https://doi.org/10.1093/jcmc/zmac029>

⁴¹ Benjamin, R., 2019. *Race After Technology: Abolitionist Tools for the New Jim Code*. Medford, MA: Polity Press; Eubanks, V., 2018. *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*. New York: St. Martin's Press.

⁴² Molnar, P., 2024. *The Walls Have Eyes: Surviving Migration in the Age of Artificial Intelligence*. New York: The New Press.

⁴³ Browne, S., 2015. *Dark Matters: On the Surveillance of Blackness*. Durham: Duke University Press.

Alon-Barkat and Busuioc 2023).⁴⁴ Classification is often treated as a technical process, involving the assignment of individuals to predefined categories based on observable features. In practice, however, these categories reflect decisions about what distinctions matter and how they should be interpreted (Bowker and Star 1999).⁴⁵

Racialization then becomes embedded within the structure of the system itself, shaping outcomes in ways that may be difficult to trace but are nonetheless profoundly consequential (Benjamin, 2019; Noble, 2018).⁴⁶ For example, if individuals from certain countries are more frequently subject to additional screening, the data generated from these screenings will reflect higher rates of detection for those populations, creating a cumulative feedback loop (Lum and Isaac, 2016; Richardson, Schultz and Crawford, 2019).⁴⁷ Risk scores, for example, are often used to determine the level of scrutiny applied to individuals, influencing decisions about entry, detention, and asylum. These scores may be generated through complex models that incorporate multiple variables, yet they are often presented in simplified form, as numerical indicators of likelihood, reducing human complexity to ones and zeroes (Pasquale, 2015; Selbst *et al.*, 2019).⁴⁸ Predictive systems trained on this data may then identify these populations as higher risk, reinforcing the initial pattern (O’Neil, 2016;

⁴⁴ Gillespie, T., 2016. Algorithm. In B. Peters (ed.) *Digital Keywords: A Vocabulary of Information Society and Culture*. Princeton, NJ: Princeton University Press, p.19; Alon-Barkat, S. and Busuioc, M., 2023. Human–AI interactions in public sector decision making: ‘Automation bias’ and ‘selective adherence’ to algorithmic advice. *Journal of Public Administration Research and Theory*, 33(1), pp.153–169. <https://doi.org/10.1093/jopart/muac007>

⁴⁵ Bowker, G.C. and Star, S.L., 1999. *Sorting Things Out: Classification and Its Consequences*. Cambridge, MA: MIT Press.

⁴⁶ Benjamin, R., 2019. *Race After Technology: Abolitionist Tools for the New Jim Code*. Medford, MA: Polity Press;

⁴⁷ Lum, K. and Isaac, W., 2016. To predict and serve? *Significance*, 13(5), pp.14–19; Richardson, R., Schultz, J.M. and Crawford, K., 2019. Dirty data, bad predictions: How civil rights violations impact police data, predictive policing systems, and justice. *New York University Law Review Online*, 94, pp.192–233.

⁴⁸ Pasquale, F., 2015. *The Black Box Society: The Secret Algorithms That Control Money and Information*. Cambridge, MA: Harvard University Press; Selbst, A.D., Boyd, D., Friedler, S.A., Venkatasubramanian, S. and Vertesi, J., 2019. Fairness and abstraction in sociotechnical systems. *Proceedings of the Conference on Fairness, Accountability, and Transparency (FAccT ’19)*, pp.59–68. <https://doi.org/10.1145/3287560.3287598>

Eubanks, 2018).⁴⁹ Over time, the system becomes increasingly confident in its classifications, as repeated observations are interpreted as evidence of underlying truth. Yet what is being reinforced is not an inherent characteristic of the population, but a pattern of observation, a certain way of seeing and interpreting. This dangerous conflation suggests that the system does not simply identify risk, but actually participates in its production while appearing neutral, objective, and technical, creating the impression of precision and replicability (Amoore, 2013; Rouvroy and Berns, 2013).⁵⁰

Decisions rendered by automated systems are presented to be grounded in data, supported by statistical reasoning. Yet the underlying processes remain opaque, both to those subject to them and to those tasked with implementing them (see Burrell 2016).⁵¹ This opacity complicates accountability, as it becomes difficult to challenge decisions when the basis for those decisions is not fully accessible (Pasquale 2015; Selbst et al. 2019).⁵² At the same time, the use of risk scores can also shift the burden of justification. For example, rather than requiring the state to demonstrate that an individual poses a threat, individuals may be required to demonstrate that they do not. This inversion (again referred to as the reverse onus principle)⁵³ reflects a broader shift toward anticipatory governance, in which action is justified not by what has occurred, but by what is deemed likely to occur (Amoore 2013).⁵⁴

⁴⁹ O'Neil, C., 2016. *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. New York: Crown Publishers; Eubanks, V., 2018. *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*. New York: St. Martin's Press.

⁵⁰ Amoore, L., 2013. *The Politics of Possibility: Risk and Security Beyond Probability*. Durham, NC: Duke University Press; Rouvroy, A. and Berns, T., 2013. Algorithmic governmentality and prospects of emancipation: Disparateness as a precondition for individuation through relationships? (trans. L. Carey-Libbrecht). *Réseaux*, 177(1), pp.163–196. <https://doi.org/10.3917/res.177.0163>

⁵¹ Burrell, J., 2016. How the machine 'thinks': Understanding opacity in machine learning algorithms. *Big Data & Society*, 3(1), pp.1–12.

⁵² Pasquale, F., 2015. *The Black Box Society: The Secret Algorithms That Control Money and Information*. Cambridge, MA: Harvard University Press; Selbst, A.D., Boyd, D., Friedler, S.A., Venkatasubramanian, S. and Vertesi, J., 2019. Fairness and abstraction in sociotechnical systems. *Proceedings of the Conference on Fairness, Accountability, and Transparency (FAccT '19)*, pp.59–68. <https://doi.org/10.1145/3287560.3287598>

⁵³ See note 44.

⁵⁴ Amoore, L., 2013. *The Politics of Possibility: Risk and Security Beyond Probability*. Durham, NC: Duke University Press.

CLASSIFYING RISK, GOVERNING LIFE

Data-driven systems participate in the reproduction and stabilization of racialized suspicion through processes of classification. These classificatory logics are also translated into material arrangements that shape the conditions under which movement takes place. In other words, if digital border technologies contributes to the identification of certain bodies, routes, and behaviors as risky, how do these identifications reorganize space, redistributing visibility, mobility, and ultimately exposure to harm?

One way of approaching this question is to move beyond the notion of the border as a fixed line and instead consider it as an assemblage of technological infrastructures such as surveillance systems, biometric databases, administrative processes, and predictive models that operate across dispersed sites while nonetheless producing a coherent effect: a practice of border necrotechnics. Within such an assemblage, classification does not remain an abstract byproduct but rather it is translated into decisions about where to allocate resources, where to intensify monitoring, and where intervention is deemed necessary. These decisions, while often presented as technical or operational, are in fact deeply shaped by the patterns discussed earlier, in which certain forms of movement have already been rendered more suspicious than others (see also Parmar 2019).⁵⁵

These renderings becomes particularly visible when returning to the Sonoran Desert, where the placement and operation of surveillance infrastructure reveals the extent to which the landscape itself is reorganized through these processes of classification (Newell, B.C., Gomez, R. and Guajardo, V. E. 2017).⁵⁶ Surveillance towers, ground sensors, and aerial systems are not distributed evenly across the terrain, but are concentrated in areas that have been identified through historical data and predictive modelling as likely crossing points. These areas, in turn, become zones of intensified visibility, where movement is more readily detected and tracked, and where the probability of interception is significantly higher (see also Chamber et al.; Nieto-Gomez 2016; Boyce 2016).⁵⁷ What follows from

⁵⁵ Parmar, A., 2019. Policing migration and racial technologies. *The British Journal of Criminology*, 59(4), pp.938-957.

⁵⁶ Newell, B.C., Gomez, R. and Guajardo, V.E., 2017. Sensors, cameras, and the new 'normal' in clandestine migration: How undocumented migrants experience surveillance at the US-Mexico border. *Surveillance & Society*, 15(1), pp.21-41

⁵⁷ Nieto-Gomez, R., 2016. Walls, sensors and drones: Technology and surveillance on the US-Mexico border. In E. Vallet (ed.) *Borders, Fences and Walls: State of Insecurity?* Abingdon:

this concentration is not simply an increase in enforcement, but a transformation in how movement occurs. People navigating the desert do not encounter surveillance as a static barrier, but as a dynamic field that must be negotiated, avoided, and recalibrated in real time. As certain routes become more heavily monitored, movement is displaced toward others, often into areas that are more remote, less predictable, and considerably more dangerous. The terrain itself becomes a medium through which governance is exercised, its risks unevenly distributed in ways that reflect the underlying logics of classification (Chamber et al.).⁵⁸

It is here that the relevance of Mbembe's concept of necropolitics becomes particularly pronounced, not as a metaphorical description of violence, but as a framework for understanding how power operates through the differential distribution of exposure. For Mbembe, sovereignty is not defined solely by the capacity to enforce law or administer territory, but by the ability to determine the conditions under which life is sustained or rendered precarious (Mbembe 2003).⁵⁹ For Mbembe, 'the colonized subject is a figure of in-between, a person who is constantly being exposed to death, whose life is a "superfluous" one' (Mbembe 2003).⁶⁰ This determination does not always take the form of direct intervention. It often operates through the structuring of environments in which certain populations are more likely to encounter harm. Within Sonoran desert context, this structuring becomes legible in the relationship between surveillance and risk. By concentrating monitoring in specific areas, the system effectively redirects movement into spaces where the likelihood of dehydration, injury, or death is significantly higher (Chambers et al., 2021).⁶¹ The result is not an explicit policy of exposure, but rather a set of conditions in which exposure becomes a predictable outcome. The surveillance towers themselves may not directly produce death, yet they

Routledge, pp.191–210; Boyce, G.A., 2016. The rugged border: Surveillance, policing and the dynamic materiality of the US/Mexico frontier. *Environment and Planning D: Society and Space*, 34(2), pp.245–262. <https://doi.org/10.1177/0263775815611423>

⁵⁸ Chambers, S.N., Boyce, G.A., Launius, S. and Dinsmore, A., 2021. Mortality, surveillance and the tertiary 'funnel effect' on the U.S.–Mexico border: A geospatial modeling of the geography of deterrence. *Journal of Borderlands Studies*, 36(3), pp.443–468

⁵⁹ Mbembe, A., 2003. Necropolitics (trans. L. Meintjes). *Public Culture*, 15(1), pp.11–40.

⁶⁰ Mbembe, A., 2003. Necropolitics (trans. L. Meintjes). *Public Culture*, 15(1), pp.11–40.

⁶¹ Chambers, S.N., Boyce, G.A., Launius, S. and Dinsmore, A., 2021. Mortality, surveillance and the tertiary 'funnel effect' on the U.S.–Mexico border: A geospatial modeling of the geography of deterrence. *Journal of Borderlands Studies*, 36(3), pp.443–468

certainly organizes the terrain in ways that make certain forms of death more probable, particularly for those whose movement is already marked as suspicious (see also Slack et al. 2016).⁶² This process does not always have to rely on overtly racialized language or explicit categorization. Instead, the redistribution of risk is mediated through technical decisions about where to place infrastructure and how to interpret data, decisions that appear neutral but are nonetheless shaped by the patterns of suspicion embedded within the system (Palister-Wilkins 2016; Vaughan-Williams 2018).⁶³ In this way, racialization operates as an underlying logic that informs how space is organized and how movement is governed.

A similar dynamic can be observed in the administrative infrastructures of the Greek asylum system, although here the reorganization of risk takes on a different form, one that operates less through spatial displacement and more through temporal regulation (Tazzioli, 2020; Mountz, 2011).⁶⁴ Upon arrival, people seeking asylum are often warehoused in giant open-air prison like refugee camps on Aegean islands between Greece, an EU member state and Turkey, a major transit country (Papataxiarchis, 2016; Vaughan-Williams 2015; Pallister-Wilkins, 2016).⁶⁵ Since the introduction of the EU-funded Multi Purpose Reception and Identification Centers (MPRICs) in 2021, they are then enrolled into systems that collect biometric data, assign case categories, and determine the sequence through which their claims will be processed (European Commission,

⁶² Slack, J., Martínez, D.E., Lee, A.E. and Whiteford, S., 2016. The geography of border militarization: Violence, death and health in Mexico and the United States. *Journal of Latin American Geography* 15(1), pp.7-32.

⁶³ Pallister-Wilkins, P., 2017. Humanitarian borderwork. In C. Günay and N. Witjes (eds.) *Border Politics: Defining Spaces of Governance and Forms of Transgressions*. Cham: Springer International Publishing, pp.85-103. Vaughan-Williams, N., 2015. *Europe's Border Crisis: Biopolitical Security and Beyond*. Oxford: Oxford University Press; Papataxiarchis, E., 2016. Being 'there': At the front line of the 'European refugee crisis' — part 1. *Anthropology Today*, 32(2), pp.5-9

⁶⁴ Tazzioli, M., 2020. Governing migrant mobility through mobility: Containment and dispersal at the internal frontiers of Europe. *Environment and Planning C: Politics and Space*, 38(1), pp.3-19; Mountz, A., 2011. The enforcement archipelago: Detention, haunting, and asylum on islands. *Political Geography*, 30(3), pp.118-128.

⁶⁵ Papataxiarchis, E., 2016. Being 'there': At the front line of the 'European refugee crisis'—part 1. *Anthropology Today*, 32(2), pp.5-9. Pallister-Wilkins, P., 2017. Humanitarian borderwork. In C. Günay and N. Witjes (eds.) *Border Politics: Defining Spaces of Governance and Forms of Transgressions*. Cham: Springer International Publishing, pp.85-103. Vaughan-Williams, N., 2015. *Europe's Border Crisis: Biopolitical Security and Beyond*. Oxford: Oxford University Press

2021; FRA, 2023).⁶⁶ These systems are often presented as mechanisms for ensuring efficiency and consistency, yet they also function as tools for sorting individuals in ways that shape their experience of the border (see also Bigo, 2000; Lyon, 2007; Mau 2022).⁶⁷ Nationality, in particular, becomes a key variable in this process, not necessarily through explicit exclusion, but through patterns of prioritization and delay that reflect broader geopolitical hierarchies (Guild et al. 2015; Moreno-Lax, 2020).⁶⁸ Applicants from certain regions may find their cases fast-tracked or deprioritized based on assessments of credibility, risk, or likelihood of acceptance, assessments that are increasingly mediated through digital systems that standardize and automate decision-making processes (Beduschi, 2021; Ozkul, 2023).⁶⁹ While these systems may not explicitly encode race, they operate through proxies that reproduce its effects, linking particular nationalities

⁶⁶ European Commission, 2021. *Managing Migration: EU Financial Support to Greece*. Brussels: Directorate-General for Migration and Home Affairs. Available at: https://home-affairs.ec.europa.eu/system/files/2021-01/202101_managing-migration-eu-financial-support-to-greece_en.pdf; European Union Agency for Fundamental Rights (FRA), 2023. *Asylum and Migration: Progress Achieved and Remaining Challenges*. Luxembourg: Publications Office of the European Union. Available at: <https://fra.europa.eu/en/publication/2023/migration-progress-challenges>

⁶⁷ Bigo, D., 2000. When two become one: Internal and external securitisations in Europe. In M. Kelstrup and M.C. Williams (eds.) *International Relations Theory and the Politics of European Integration: Power, Security and Community*. London: Routledge, pp.171–204.; Lyon, D., 2007. Surveillance studies: An overview. Mau, S. (2022) *Sorting Machines: The Reinvention of the Border in the 21st Century*. Cambridge: Polity Press.

⁶⁸ Guild, E., Costello, C., Garlick, M., Moreno-Lax, V. and Carrera, S., 2015. *Enhancing the Common European Asylum System and Alternatives to Dublin*. Study for the LIBE Committee of the European Parliament, PE 519.234. Brussels: European Parliament. Available at: https://www.europarl.europa.eu/cmsdata/226745/Sessions_1_and_2_-_Study_European_Asylum_System_and_Alternatives_to_Dublin.pdf; Moreno-Lax, V., 2020. The architecture of functional jurisdiction: unpacking contactless control — on public powers, *SS and Others v. Italy*, and the ‘operational model’. *German Law Journal*, 21(3), pp.385–416. <https://doi.org/10.1017/glj.2020.25>

⁶⁹ Beduschi, A., 2021. International migration management in the age of artificial intelligence. *Migration Studies*, 9(3), pp.576–596; Ozkul, D., 2023. *Automating Immigration and Asylum: The Uses of New Technologies in Migration and Asylum Governance in Europe*. Oxford: Algorithmic Fairness for Asylum Seekers and Refugees (AFAR) Project, University of Oxford/Hertie School. Available at: https://www.hertie-school.org/fileadmin/2_Research/1_About_our_research/2_Research_centres/Centre_for_Fundamental_Rights/AFAR/Automating-immigration-and-asylum_Ozkul.pdf

and identities to forms of suspicion that shape how cases are handled (Fassin, 2011; El-Enany, 2020).⁷⁰

The consequences of this categorization are not immediately visible in the same way as the Sonoran desert, where exposure to harm is tied to physical terrain, yet they are no less significant. Individuals may spend months or years in conditions of uncertainty and precarity, their lives suspended within bureaucratic processes that are difficult to navigate and even harder to contest. This temporal dimension of governance, in which delay itself becomes a mechanism of control, reflects a form of slow violence (Nixon 2011),⁷¹ where harm accumulates gradually through the prolonged denial of stability and security. What links these different contexts is the underlying logic through which classification is translated into lived experience. In both cases, the identification of certain populations as risky, whether through predictive models, administrative categories, or historical data, results in the redistribution of burden and harm, whether that burden takes the form of physical danger or prolonged uncertainty, and often both. The system does not need to explicitly target individuals in order to produce these outcomes. It operates through the structuring of conditions that differentially affect those already positioned within its field of suspicion (Bigo, 2006; Huysmans, 2006; Foucault, 1986; Amoore, 2006 and 2013).⁷²

This logic becomes even more pronounced in the context of the Occupied Palestinian Territories, where the integration of surveillance

⁷⁰Fassin, D., 2011. Policing borders, producing boundaries. The governmentality of immigration in dark times. *Annual Review of anthropology*, 40, pp.213–226; El-Enany, N., 2020. *(B)ordering Britain: Law, Race and Empire*. Manchester: Manchester University Press.

⁷¹Nixon, R., 2011. *Slow Violence and the Environmentalism of the Poor*. Cambridge, MA: Harvard University Press.

⁷²Foucault, M., 2008. *The Birth of Biopolitics: Lectures at the Collège de France, 1978–1979* (ed. M. Senellart, trans. G. Burchell). Basingstoke: Palgrave Macmillan, 131; Foucault, M., 1986. Of other spaces (trans. J. Miskowicz). *Diacritics*, 16(1), pp.22–27; Amoore, L., 2006. Biometric borders: Governing mobilities in the war on terror. *Political Geography*, 25(3), pp.336–351.; Amoore, L., 2009. Algorithmic war: Everyday geographies of the war on terror. *Antipode*, 41(1), pp.49–69; Amoore, L., 2011. Data derivatives: On the emergence of a security risk calculus for our times. *Theory, Culture & Society*, 28(6), pp.24–43; Amoore, L. (2020) *Cloud Ethics: Algorithms and the Attributes of Ourselves and Others*. Durham, NC: Duke University Press; Bigo, D., 2006. Internal and external aspects of security. *European Security*, 15(4), pp.385–404; Huysmans, J., 2006. *The Politics of Insecurity: Fear, Migration and Asylum in the EU*. London: Routledge; Foucault, M., 1986. Of other spaces (trans. J. Miskowicz). *Diacritics*, 16(1), pp.22–27.

technologies into everyday governance produces a form of control that is both pervasive and continuous, both life-giving and life-taking (Weizman, 2024 and 2026; Tawil-Souri, 2012; Zureik, 2010).⁷³ Here, biometric systems, predictive tools, and physical checkpoints operate in conjunction with other regimes of Israeli apartheid, creating an environment in which movement is constantly monitored and regulated (see Shtaya 2022; Amnesty International 2023).⁷⁴ Suspicion, in this context, is not tied to specific actions or events, but is embedded within the very fact of being, shaping how Palestinian individuals move through space and how their presence is interpreted. Furthermore, when systems of monitoring are integrated into the fabric of daily life, they cease to appear as exceptional measures and instead become part of the background conditions through which existence is organized (Loewenstein 2023).⁷⁵ This normalization is central to necropolitics, in which the management of life and death is not always exercised through visible acts of violence, but rather through the continuous regulation of conditions under which life is lived.

In Gaza, this logic is intensified to its most extreme expression. Surveillance is folded directly into the conduct of a technologically facilitated genocide (Rigot 2024, Katiba 2024),⁷⁶ where AI-enabled systems are used to generate targets, classify individuals, and facilitate

⁷³Weizman, E., 2024. *Hollow Land: Israel's Architecture of Occupation*. New edn. London: VersoWeizman, E., 2026. *Ungrounding: The Architecture of Genocide*. London: Penguin Press; Tawil-Souri, H., 2012. Digital occupation: Gaza's high-tech enclosure. *Journal of Palestine Studies*, 41(2), pp.27–43; Zureik, E., Lyon, D. and Abu-Laban, Y. (eds.), 2010. *Surveillance and Control in Israel/Palestine: Population, Territory and Power*. London: Routledge.

⁷⁴Shtaya, M., 2022. Nowhere to hide: The impact of Israel's digital surveillance regime on the Palestinians. *Middle East Institute*, 27 April. Available at: <https://mei.edu/publication/nowhere-hide-impact-israels-digital-surveillance-regime-palestinians/>; Amnesty International, 2023. *Automated Apartheid: How Facial Recognition Fragments, Segregates and Controls Palestinians in the OPT*. London: Amnesty International. Available at: <https://www.amnesty.org/en/documents/mde15/6701/2023/en/>

⁷⁵Loewenstein, A., 2023. *The Palestine Laboratory: How Israel Exports the Technology of Occupation Around the World*. London: Verso Books.

⁷⁶Rigot, A., 2024. The weaponization of things: Israel's techno-violence, a litmus test for technologists. *Tech Policy Press*, 4 November. Available at: <https://www.techpolicy.press/the-weaponization-of-things-israels-technoviolence-a-litmus-test-for-technologists/>; Katibah, L., 2024. The genocide will be automated — Israel, AI and the future of war. *Middle East Report*, (312). Available at: <https://www.merip.org/2024/10/the-genocide-will-be-automated-israel-ai-and-the-future-of-war/>

strikes at scale. Here, the distinction between monitoring and killing collapses, as data-driven classifications are translated into lethal outcomes with increasing speed and reduced human intervention (see also Pansera 2025).⁷⁷ The infrastructures that govern life in the West Bank find their corollary in Gaza in systems that govern death, where movement is not only constrained but rendered deadly, and where the very conditions of existence are organized through the calculated distribution of exposure to violence. The Palestinian context reveals what becomes possible when predictive systems are fully integrated into governance structures, allowing for the continuous assessment and management of populations based on criteria that are often opaque and difficult to challenge.

A consistent pattern emerges across these sites, in which the outputs of AI-driven classification are translated into material arrangements that shape how human movement is experienced (see also broadly Dijstelbloem, H., 2021).⁷⁸ These arrangements are not uniform, nor do they operate in the same way across contexts, yet they share a common orientation: the differential distribution of visibility, mobility, and exposure in ways that reflect and reinforce existing racial hierarchies. To understand the role of automation in this process, therefore, requires moving beyond its function as a tool of classification and considering its role in the reorganization of space and time (Lyon 2003).⁷⁹ It is not only that automation identifies who is risky. Instead, these identifications are used to structure the very environments in which individuals move, shaping the conditions under which risk to life is encountered and experienced (see also Chambers and Soto 2025).⁸⁰

⁷⁷ Pansera, M., 2025 What's left of responsible innovation after Gaza? Ecocide, epistemicide, and genocide in occupied Palestine, *Journal of Responsible Technology*, Volume 23, 2025, 100132,

⁷⁸ Dijstelbloem, H., 2021. *Borders as infrastructure: The technopolitics of border control*. MIT Press.

⁷⁹ Lyon, D. (2003) *Surveillance as social sorting: Privacy, risk, and digital discrimination*. London: Routledge.

⁸⁰ Chambers, S.N. and Soto, G., 2025. The geography of intent: The bodily implications of border surveillance technologies. *Political Geography*, 120, p.103332.

SECURITIZATION, AESTHETIC NEUTRALITY, AND THE ACTIVE OBSCURING OF POWER

Racialized patterns of suspicion are embedded within data and translated into spatial and administrative arrangements that shape the lived experience of the border. However, these processes are rendered intelligible and, crucially, legitimate through broader discursive and institutional frameworks. The relationship between racialization and securitization is a mutually reinforcing logic through which mobility is governed and justified (see also Maass 2023).⁸¹

The figure of the threatening outsider does not emerge spontaneously but is instead actively produced and reproduced through sets of discursive practices that link particular populations to broader anxieties about disorder, instability, and moral decline (Hall et al. 1978; see also Hansen and Finn Stepputat 2003, Appadurai 2006).⁸² These linkages are rarely explicit in their invocation of race (although this also seems to be changing in recent years with intensifying violent rhetoric in various Western administrations, see Strickland 2025)⁸³ yet they operate through associations that are deeply racialized, drawing on historical imaginaries that position certain bodies as inherently suspect. Within the context of contemporary migration, the figure of the ‘migrant’ often functions in precisely this way, serving as a site onto which fears about economic precarity, cultural transformation, and political insecurity are projected. (Lemberg-Pedersen and Haioty 2020).⁸⁴ What is significant about this process is not only the production of the figure itself, but the way in which it authorizes particular forms of intervention. Once movement is framed as a source of risk, the

⁸¹ Maass, R.W., 2023. Racialization and international security. *International Security*, 48(2), pp.91–126.

⁸² Hansen, T.B. and Stepputat, F. (eds.), 2005. *Sovereign Bodies: Citizens, Migrants, and States in the Postcolonial World*. Princeton, NJ: Princeton University Press; Hansen, T.B. and Stepputat, F., 2005. Introduction. In T.B. Hansen and F. Stepputat (eds.) *Sovereign Bodies: Citizens, Migrants, and States in the Postcolonial World*. Princeton, NJ: Princeton University Press, pp.1–38. Appadurai, A., 2006. *Fear of Small Numbers: An Essay on the Geography of Anger*. Durham, NC: Duke University Press. 49–85

⁸³ Strickland, P., 2025. The long, lethal history of Trump’s ‘invasion’ rhetoric. *Inkstick*, 15 December. Available at: <https://inkstickmedia.com/the-long-often-lethal-history-of-trumps-anti-immigrant-invasion-rhetoric-conspiracy-theory/>

⁸⁴ Lemberg-Pedersen, M. and Haioty, E., 2020. Re-assembling the surveillable refugee body in the era of data-craving. *Citizenship Studies*, 24(5), pp.607–624. <https://doi.org/10.1080/13621025.2020.1784641>

expansion of surveillance, enforcement, and control can be justified as necessary responses to an identified threat. Therefore, practices of securitization describe a reorganization of governance, in which practices that might otherwise be contested are rendered acceptable, even inevitable in the perceived assault on national security and the very moral fabric of ‘modern western ways of life’ (see also Amoore 2006, Sparke 2006).⁸⁵

The promise of digital border technologies lie in their capacity to render complex social processes legible through data, to translate uncertainty into calculable risk, and to provide a basis for decision-making that appears grounded in objective analysis rather than subjective judgment. In the context of border governance, this promise of objectivity and impartiality is particularly powerful, as it aligns with existing demands for efficiency, control, as well as predictive capacity (Molnar and Gill 2018, Barrett 2017).⁸⁶ Risk-scoring systems, biometric identification tools, and automated classification processes are presented as solutions to the perceived unpredictability of migration, offering a way to manage movement in advance rather than reacting to it after the fact (Nyabola 2023; see also Baykurt, B. and Lyamuya, A., 2024; Vavoula 2021).⁸⁷ Yet what this promise obscures is the extent to which these systems are embedded within the very dynamics they claim to neutralize. The categories through which risk is assessed are not generated independently of the social context in which they operate. Instead, they are shaped by the same narratives and assumptions that structure securitization, translating them into technical form (Noble 2021, Benjamin 2019).⁸⁸ In this way, AI seeks to operationalize the figure of the ‘threatening migrant,’ deeply embedding it within systems that classify and sort individuals based on criteria that are often

⁸⁵ Louise Amoore, “Biometric Borders: Governing Mobilities in the War on Terror,” *Political Geography* 25, no. 3 (2006): 336; Matthew Sparke, “A Neoliberal Nexus: Economy, Security, and the Biopolitics of Citizenship on the Border,” *Political Geography* 25, no. 2 (2006): 151.

⁸⁶ Barrett, L., 2017. Reasonably suspicious algorithms: Predictive policing at the United States border. *NYU Rev. L. & Soc. Change*, 41, p.327.

⁸⁷ Baykurt, B. and Lyamuya, A., 2024. Making up the predictable border: How bureaucracies legitimate data science techniques. *New Media & Society*, 26(12), pp.6958–6974. <https://doi.org/10.1177/14614448231161276>; Vavoula, N., 2021. Artificial intelligence (AI) at Schengen borders: Automated processing, algorithmic profiling and facial recognition in the era of techno-solutionism. *European Journal of Migration and Law*, 23(4), pp.457–484.

⁸⁸ Benjamin, R., 2019. Assessing risk, automating racism. *Science*, 366(6464), pp.421–422.

presented as neutral but are nonetheless deeply structured by prior associations of race, otherness, and risk (see also Browne 2015).⁸⁹

This translation has important consequences for how power is exercised and understood. When decisions are framed as the output of technical systems, they can appear detached from the political choices that underpin them (Almazán and Prádanos 2024).⁹⁰ This apparent detachment is the ultimate expression of aesthetic neutrality, or the idea that technologies or projects can be designed in such a way as to minimize or remove subjective emotional expression or political signaling to achieve a functional, timeless, and universally adaptable aesthetic. In the border technology context, the question of who is being classified as risky, and why, is displaced by questions about model accuracy, system performance, and data quality. Responsibility is distributed across a network of actors such as tech developers, private entities, international agencies, and even algorithms, making it more difficult to identify points of accountability (for laundering of responsibility across actors, including international organizations, see Raustiala and Slaughter 2002; Shkabatur 2011).⁹¹ Automation and border technologies therefore do not simply extend the capacity of the state to govern mobility. They also actively reconfigure the terms on which that governance can be contested, deliberately diffusing responsibility (see Thompson 1980).⁹²

The authority of AI systems rests on their appearance as objective, impartial, and data-driven. This appearance functions as a form of legitimation, allowing decisions that have profound consequences for individuals' lives to be framed as the inevitable outcome of computational processes

⁸⁹ Browne, S., 2015. *Dark Matters: On the Surveillance of Blackness*. Durham: Duke University Press.

⁹⁰ Almazán, A. and Prádanos, L.I., 2024. The political ecology of technology: A non-neutrality approach. *Environmental Values*, 33(1), pp.3-9.

⁹¹ Raustiala, K. and Slaughter, A.M., 2002. International law, international relations and compliance. In W. Carlsnaes, T. Risse and B.A. Simmons (eds.) *Handbook of International Relations*. London: SAGE Publications, 538, 539; Jennifer Shkabatur, "A Global Panopticon? The Changing Role of International Organizations in the Information Age," *Michigan Journal of International Law* 33(2) (2011): 159.

⁹² This diffusion also includes internal disaggregation of responsibility among state actors and bureaucratic departments. See for example Thompson, D. F. (1980) 'Moral responsibility of public officials: The problem of many hands', *The American Political Science Review*, 74(4), pp. 905-916.

(see also Schuilenburg and Peeters 2021).⁹³ The language of algorithms, models, and risk scores lends an aura of precision and inevitability, even where the underlying processes remain opaque. The ways in which certain border technologies are prioritized (AI for lie detectors at the border vs AI for the identification of racist border guards) reflects the broader conditions under which they are developed and deployed (Molnar 2024),⁹⁴ in which technical solutions to the so-called problem of migration are often prioritized over complex conversations about the root causes of migration such as western warmongering, apartheid regimes, and environmental degradation that actively displace millions of people all over the world.

CONCLUSION: NECROTECHNIC WORLD ORDER

The digitized border functions as a mechanism for preserving and reinscribing global racial hierarchies, regulating movement in ways that reflect and reproduce inequalities rooted in colonial histories (Achiume 2021).⁹⁵ Emerging digital border technologies intensify these dynamics, enabling more precise, extensive, and continuous forms of classification and control, through which mobile populations are persistently identified and managed as risks, differentially distributing life chances (Mbembe 2003).⁹⁶ Across the contexts examined in this chapter from the Sonoran desert to Greek asylum systems to the Occupied Palestinian Territories, the integration of AI into border governance contributes to a reorganization of exposure, in which some populations are systematically more likely to encounter conditions that are precarious, constrained, or life-threatening. This exposure is rarely the result of a single intervention. Rather, it emerges through the cumulative effects of classification, surveillance, and infrastructural control.

What binds these discursive, technical, and material dimensions is their co/constitution within a system that is both highly effective and difficult to contest. Securitization provides the narrative framework that renders intervention necessary, while automation and border technologies

⁹³ Schuilenburg, M. and Peeters, R. (eds.), 2021. *The Algorithmic Society: Technology, Power, and Knowledge*. London: Routledge

⁹⁴ Molnar, P., 2024. *The Walls Have Eyes: Surviving Migration in the Age of Artificial Intelligence*. New York: The New Press.

⁹⁵ Achiume, E.T., 2021. Digital racial borders. *American Journal of International Law*, 115(S1), pp.333–338. <https://doi.org/10.1017/aju.2021.52>

⁹⁶ Mbembe, A., 2003. Necropolitics (trans. L. Meintjes). *Public Culture*, 15(1), pp.11–40.

operationalize this logic through systems of prediction, sorting, and classification that shape how movement is governed in practice. To describe the digital border as racialized, then, is not simply to point to unequal outcomes, but to recognize that the very processes through which mobility is organized are structured through distinctions that reflect and reproduce broader patterns of inequality (Achiume 2021; Benjamin 2019, Noble 2018).⁹⁷ These distinctions are often indirect, operating through proxies, correlations, and data-driven classifications that render racialized populations legible as risks while maintaining the appearance of neutrality.

Technologies like automated decision-making and AI reorganize and intensify racialized distinctions that have long structured the regulation of mobility. By embedding these distinctions within data-driven systems, AI renders suspicion more durable, scalable, and difficult to contest, transforming historically contingent patterns of inequality into seemingly objective outputs. What emerges is a border that operates less as a physical space than as a digitized assemblage of infrastructures extending across space and time through which classification, surveillance, and prediction are translated into differentiated conditions of life and death. Within this infrastructure, racialization does not appear as an external distortion, but as the key structuring logic that informs both the design of systems and the decisions they produce (see also Molnar 2024).⁹⁸ To understand the harms associated with AI at the border, therefore, requires more than an examination of technical systems in isolation. It demands engagement with the histories, narratives, and institutional practices that condition how these systems function, where racialized distinctions are not only reproduced but operationalized, shaping who is exposed to precarity, who is contained, and whose mobility is rendered both suspect and disposable.

⁹⁷ Achiume, E.T., 2021. Digital racial borders. *American Journal of International Law*, 115(S1), pp.333–338; Benjamin, R., 2019. *Race After Technology: Abolitionist Tools for the New Jim Code*. Medford, MA: Polity Press; Noble, S.U., 2018. *Algorithms of Oppression: How Search Engines Reinforce Racism*. New York: NYU Press.

⁹⁸ Molnar, P., 2024. AI in border control and migration: Techno-racism and exclusion at digital borders. In *Handbook on Public Policy and Artificial Intelligence* (pp. 307–322). Edward Elgar Publishing.

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CHAPTER 3

Carceral Borders: Detention, Punishment, and the Automation of Confinement

Abstract This chapter examines how contemporary border regimes operate as carceral systems that govern mobility through confinement, surveillance, and the differential distribution of life chances. It begins by situating the concept of crimmigration within a broader framework of racialized carceral governance, arguing that migration control increasingly functions as punishment without crime, often operating beyond the procedural safeguards of criminal law. This chapter then turns to immigration detention as a central site through which these dynamics are made visible, before tracing how AI and automated systems extend and intensify carceral control across space and time. Drawing on empirical examples from Europe and the United States, it demonstrates how these systems diffuse responsibility, rendering punishment infrastructural, opaque, and difficult to contest. Finally, this chapter situates these developments within a broader political economy of border control, arguing that contemporary carceral borders are sustained not only through logics of security but also through systems that render confinement and exposure productive, where border necrotechnics dictate the organization of life and death.

Thank you to the initial Palgrave peer reviewer for the very helpful reframing and suggestions to reorient this chapter toward carcerality as well as for the previously missing criminological literature

Keywords Carceral governance • Immigration detention • Punishment without crime • Infrastructural opacity • Political economy of border control



Graveyard for people-on-the-move in Evros, Greece. The tombstone inscription reads: ‘In the name of God, the Most Gracious, the Most Merciful. To God we belong and to Him we will return. Sumaya Mohammadi, daughter of Mohammad Hashim. Born 23/09/1993. Died 22/2/2021. Afghanistan’ | P. Molnar | 2021

Outside a small village in the Greek border region of Evros lies a small cemetery. It is full of mostly unmarked graves, the final resting place of people who died making the dangerous land crossing into Europe from neighboring Turkey. While maritime borders often receive the most attention in this part of the world, this forgotten land border has also become a testing ground for various surveillance technologies like infrared cameras, blimps, drones, and even sound-cannons, pushing people to make increasingly riskier choices to avoid detection.

Some graves have markings, sent by the families of those who were able to be identified after death to the imam of the local village mosque, one of the few in

the region. There are decaying yellow roses on one relatively fresh grave, perhaps an act of recognition or care from the local villagers. It belongs to Sumaya Mohamadi, a young woman from Afghanistan who was buried there only weeks before my visit. She was 28 years old.

Elsewhere, on the islands of the Aegean, the border takes a different form.

On the island of Samos, a sprawling complex of raw concrete baking under the hot Mediterranean sun looks more like a prison than a refugee camp. Rows of containers stretch across the landscape, geographically segregated from the main city of Vathi. It now takes hours by foot to reach a lawyer's office, a doctor, or even to just feel the sea breeze for a few hours of respite from the biometric checkpoints, drones, and surveillance cameras that patrol the camp.

*Noor, a journalist from Syria sits outside a container, holding a paper with a number printed at the top—her refugee identification. She has been waiting for three years, transferred from camp to camp, from container to container. Noor cannot leave Samos island as she waits for her case to be processed, separated from her husband and family. Around her, others wait as well, their lives suspended. 'I feel like a criminal every day,' says Noor. 'But my only crime is wanting life.'*¹

FROM CRIMINALIZATION TO CARCERAL GOVERNANCE

The relationship between migration control and criminal law has been extensively theorized through the concept of crimmigration, which captures the growing convergence between immigration enforcement and criminal justice systems (García Hernández 2013; van der Woude, Barker, and van der Leun 2017).² Over the past several decades, practices once confined to the criminal sphere such as detention, surveillance, risk assessment, and data-sharing have increasingly migrated into the governance of mobility. Administrative violations, such as visa overstays or unauthorized entry, are treated through mechanisms that resemble punishment, even

¹From 2020 until 2024, I have conducted over 20 visits and multi-week research trips to the Greek island camps of Samos, Lesbos, Kos, and Leros as well as in-land refugee camps such as Ritsona, including two trips to the region of Evros and the Greek/Turkey land border. This vignette is a composite of these various visits, including conversations with Noor.

²García Hernández, C.C., 2013. Creating crimmigration. *BYU L. Rev.*, p.1457.; Van der Woude, M., Barker, V. and Van Der Leun, J., 2017. Crimmigration in Europe. *European Journal of Criminology*, 14(1), pp.3-6. See also Stumpf, J., 2006. The the crimmigration crisis: Immigrants, crime, and sovereign power. *Am. UL Rev.*, 56, p.367. Menjivar, C., Gómez Cervantes, A. and Alvord, D., 2018. The expansion of "crimmigration," mass detention, and deportation. *Sociology Compass*, 12(4), p.e12573.

where they are not formally defined as criminal offenses (see Stumpf 2006).³

This chapter examines how contemporary border regimes operate as carceral systems that govern mobility through confinement, surveillance, and the differential distribution of life chances. It begins by situating the concept of crimmigration within a broader framework of racialized carceral governance, arguing that migration control increasingly functions as punishment without crime, often operating beyond the procedural safeguards of criminal law (see also Arriaga 2016).⁴ This chapter then turns to immigration detention as a central site through which these dynamics are made visible, before tracing how AI and automated systems extend and intensify carceral control across space and time. Drawing on empirical examples from Europe and the United States, it demonstrates how these systems diffuse responsibility, rendering punishment infrastructural, opaque, and difficult to contest. Finally, this chapter situates these developments within a broader political economy of border control, arguing that contemporary carceral borders are sustained not only through logics of security but also through systems that render confinement and exposure productive, where border necrotechnics dictate the organization of life and death.

The concept of crimmigration has been particularly useful in demonstrating how migration has come to be framed through logics of suspicion and control, transforming people on the move into subjects of enforcement rather than protection. As Bosworth (2014)⁵ and Aas (2011)⁶ have shown, immigration systems increasingly operate through practices that mirror policing, even as they remain legally distinct. This convergence blurs the boundaries between controlling crime and migration governance, creating a system in which individuals may be detained, monitored, and expelled through processes that resemble criminal justice, but without its procedural safeguards (Silverman and Molnar 2019).⁷ Yet while the

³ Stumpf, J., 2006. The crimmigration crisis: Immigrants, crime, and sovereign power. *American University Law Review*, 56(2), pp.367–41.

⁴ Arriaga, F., 2016. Understanding crimmigration: Implications for racial and ethnic minorities within the United States. *Sociology Compass*, 10(9), pp.805–812.

⁵ Bosworth, M., 2014. *Inside immigration detention*. OUP Oxford.

⁶ Aas, K.F., 2011. ‘Crimmigrant’bodies and bona fide travelers: Surveillance, citizenship and global governance. *Theoretical criminology*, 15(3), pp.331–346.

⁷ For example, during my practice as a refugee lawyer in Canada between 2016 and 2020, I routinely represented people in immigration detention. I saw first-hand how few proce-

concept of crimmigration captures an important shift, it does not fully account for the dynamics at play in contemporary border regimes that increasingly rely on technological decisions. Many of the practices examined in this book such as predictive risk scoring, biometric registration, automated triage, and remote surveillance, do not simply extend criminal law into the domain of migration. In many cases, they operate entirely outside it. They are justified not only through the language of crime but also through the language of security, risk management, and administrative necessity (Amoore 2013). As a result, the governance of mobility increasingly takes place in a space that is neither fully criminal nor fully civil, but something more diffuse.

Criminal law, for all its coercive force, is structured by a set of procedural constraints: the requirement of an offense, the presumption of innocence (at least in some jurisdictions), the right to legal representation and a fair hearing, and the imposition of a sentence with defined limits (Silverman and Molnar 2016).⁸ Migration control, by contrast, often lacks these boundaries. Individuals may be detained without having committed a crime, held for indeterminate periods, and subjected to decisions that are difficult to challenge or even understand. In this sense, the expansion of border enforcement does not simply criminalize migration—it directly produces forms of governance that operate beyond the protections traditionally associated with criminal justice. It is in this context that it becomes useful to shift the analytic frame from criminalization to carcerality. Drawing on critical criminology and abolitionist scholarship, carcerality refers not only to prisons or formal punishment, but to a broader set of practices through which populations are contained, controlled, and rendered governable (see Gilmore 2007; Foucault 1977, among others).⁹ These practices extend across institutions and infrastructures, shaping how space is organized, how time is experienced, and how bodies are

dural protections existed for detained, including access to counsel, psycho-social supports, and meaningful review mechanisms, especially for immigration detainees housed in Canada's medium security prisons (e.g., see Silverman, S.J. and Molnar, P., 2019. Caged at the border: Immigration detention and the denial of human rights to asylum seekers and other migrants. In *The Routledge History of Human Rights* pp. 579-600 Routledge.)

⁸ Silverman, S.J. and Molnar, P., 2016. Everyday injustices: Barriers to access to justice for immigration detainees in Canada. *Refugee Survey Quarterly*, 35(1), pp.109-127.

⁹ Gilmore, R. W. (2007). *Golden gulag: Prisons, surplus, crisis, and opposition in globalizing California*. University of California Press; Foucault, M. (1977). *Discipline and punish: The birth of the prison* (A. Sheridan, Trans.). Vintage Books.

regulated. The border, increasingly, functions as a carceral system in this expanded sense, producing.

Punishment without crime (see Garcia Hernandez 2015; Bosworth 2018).¹⁰ Confinement, restriction, and surveillance are not tied to a specific offense, but rather to a condition of being, of moving (or attempting to move) across spaces where mobility is regulated. The individual subject is punished for what they represent within a broader regime of risk, not only for what they have or may have done, thus generalizing suspicion (Gouldin 2022; for an analysis of generalized suspicion in the criminal justice context see Bloom¹¹) and pre-empting intervention, collapsing the distinction between enforcement and punishment. AI and automated systems intensify this shift. By embedding decision-making within data-driven infrastructures, they enable forms of control that are continuous, scalable, and often opaque. Risk is calculated and decided upon even before a person moves. Confinement is justified as a precaution against potential future actions, not only as a response to wrongdoing (see also broadly Alexander 2012).¹² In this way, the border and its increasing digitization does not simply mimic the criminal justice system. It reorganizes its logics, producing a form of carceral governance in which punishment is detached from crime, and where the mechanisms of control operate through systems that are increasingly difficult to see, contest, or escape.

IMMIGRATION DETENTION: PUNISHMENT WITHOUT CRIME

Immigration detention provides one of the most concrete and visible expressions of carceral border governance. Across jurisdictions, immigration detention is formally justified as an administrative measure: a tool to facilitate deportation, verify identity, or manage asylum processes (see McGregor 2024).¹³ It is not, in strict legal terms, a punishment. Those held in immigration detention have not been convicted of a crime, and, in

¹⁰García Hernández, C. C. (2014). Immigration detention as punishment. *Immigration and Nationality Law Review*, 35, 385. Bosworth, M., 2019. Immigration detention, punishment and the transformation of justice. *Social & Legal Studies*, 28(1), pp.81-99.

¹¹Gouldin, L. P. (2022). Crimes of suspicion. *Emory Law Journal*, 72, 1429; Bloom, A. H. (2026). Suspicion by association. *Arizona Law Review*, 68(1).

¹²Michelle Alexander, *The New Jim Crow: Mass Incarceration In The Age Of Colorblindness* 103 (Rev. Ed. 2012)

¹³McGregor, L., 2024. *Detention and Its Alternatives under International Law*. Oxford University Press.

many cases, have not committed any offense at all beyond administrative infractions related to entry or stay. International law reinforces this distinction: the 1951 Refugee Convention prohibits penalizing asylum seekers for irregular entry when they present themselves without delay (Article 31),¹⁴ while human rights bodies have consistently affirmed that detention based solely on migration status must be exceptional, necessary, and proportionate (UNHCR 2012; UN Working Group on Arbitrary Detention 2018).¹⁵ Yet the lived reality of detention complicates this distinction.

Modern immigration detention operates through many of the same mechanisms as the prison system: confinement in secure facilities, restriction of movement, surveillance of daily activities, and the imposition of routines that regulate time and behavior (Bosworth 2014).¹⁶ Detainees are counted, monitored, and controlled, often in environments that are indistinguishable from carceral institutions. The border itself increasingly functions as a penal site, where exclusion is enacted through practices that mirror punishment, even as they remain formally administrative (Aas 2011).¹⁷ The result is a system in which individuals experience detention as punishment, regardless of how it is categorized in law. This disjuncture between legal form and material experience is central. Immigration detention occupies what might be understood as a space of punishment without crime, in which coercive measures are applied in the absence of criminal culpability (Bosworth 2019).¹⁸ The expansion of immigration enforcement has blurred the boundaries between civil and criminal law, producing a regime in which administrative violations trigger punitive consequences (Majcher, I. and de Senarclens, C., 2014).¹⁹ Yet, the situation is even more complex. The governance of migration operates not

¹⁴Convention Relating to the Status of Refugees (adopted 28 July 1951, entered into force 22 April 1954) 189 UNTS 137 (Refugee Convention)

¹⁵UNHCR, 2012. *Detention guidelines: Guidelines on the applicable criteria and standards relating to the detention of asylum-seekers and alternatives to detention*. Geneva: UNHCR; UN Working Group on Arbitrary Detention, 2018. *Revised deliberation No. 5 on deprivation of liberty of migrants*. UN Doc. A/HRC/39/45. Geneva: Office of the United Nations High Commissioner for Human Rights.

¹⁶Bosworth, M., 2014. *Inside immigration detention*. OUP Oxford

¹⁷Aas, K.F., 2011. 'Crimmigrant' bodies and bona fide travelers: Surveillance, citizenship and global governance. *Theoretical Criminology*, 15(3), pp. 331–346.

¹⁸Bosworth, M., 2019. Immigration detention, punishment and the transformation of justice. *Social & Legal Studies*, 28(1), pp. 81–99.

¹⁹Majcher, I. and de Senarclens, C., 2014. Discipline and punish? Analysis of the purposes of immigration detention in Europe. *AmeriQuests*, 11(2), pp. 1–21.

through the extension of criminal law, but also through its circumvention. Criminal justice systems, for all their limitations, are structured by procedural protections: the requirement of evidence, the right to a defense, limits on sentencing. Immigration detention, by contrast, often lacks these constraints.

This absence is particularly evident in the temporal dimensions of detention. Unlike criminal sentences, which are defined by fixed durations, immigration detention is frequently indeterminate. For example, Canada's immigration detention estate does not have any statutory time limits, and individuals may be held for months or years without a clear endpoint, their confinement justified not by past actions but by administrative processes that remain unresolved (Larson and Piche 2009; Antsis et al. 2017).²⁰ Bosworth and Turnbull's work on time and waiting in detention highlights how this indeterminacy produces a form of temporal punishment, in which uncertainty itself becomes a mechanism of control (Bosworth and Turnbull 2017, Turnbull 2016; Von Werthern et al. 2018).²¹ Time stretches, stalls, and becomes difficult to inhabit, let alone survive, as people in detention are suspended within systems that offer neither resolution nor release. The spatial dimensions of detention further reinforce its carceral character. Facilities are often located in remote or peripheral areas, physically separating detainees from legal support, community networks, and public scrutiny (Silverman and Molnar 2019).²² This spatial isolation is not incidental. It reflects a broader logic in which the governance of migration is pushed to the margins, both geographically and politically, rendering its practices less visible and less contestable. As

²⁰ Larsen, M. and Piché, J., 2009. Exceptional state, pragmatic bureaucracy, and indefinite detention: The case of the Kingston Immigration Holding Centre. *Canadian Journal of Law and Society/La Revue Canadienne Droit et Société*, 24(2), pp. 203–229; Antsis, S., Blum, J. and Will, J., 2017. Separate but Unequal: Immigration detention in Canada and the great writ of liberty. *McGill Law Journal*, 63(1), pp. 1–44.

²¹ Bosworth, M. and Turnbull, S., 2017. Immigration detention, punishment and the criminalization of migration. In: S. Pickering and J. Ham, eds. *The Routledge handbook on crime and international migration*. London: Routledge, pp. 91–106; Von Werthern, M., Robjant, K., Chui, Z., Schon, R., Ottisova, L., Mason, C. and Katona, C., 2018. The impact of immigration detention on mental health: a systematic review. *BMC Psychiatry*, 18(1), p. 382.

²² Silverman, S.J. and Molnar, P., 2019. Caged at the border: Immigration detention and the denial of human rights to asylum seekers and other migrants. In *The Routledge History of Human Rights* (pp. 579–600). Routledge

Bosworth and Guild (2008) and others²³ have noted, detention sites function as zones of exception, where ordinary legal protections are weakened or suspended.

At the same time, detention does not operate in isolation from other forms of control. It is embedded within a wider assemblage of surveillance, data collection, and risk assessment that extends beyond the physical confines of detention centers. Here, recent work in criminology becomes particularly important. Milivojevic (2019, 2021)²⁴ demonstrates how emerging technologies are reshaping border control practices in Western Balkans, enabling new forms of monitoring and classification that blur the boundaries between policing, security, and migration governance. Similarly, Singler (2025)²⁵ argues that digital tools are central to the outsourcing and expansion of crimmigration control, allowing states to extend their reach while diffusing responsibility across private actors and technological systems, as the following chapter will also explore.

Within this broader context, detention can therefore be understood not as an isolated practice, but rather as one node within a larger carceral infrastructure that punishes and harms. Individuals may move between different forms of control: from biometric registration to risk scoring, from electronic monitoring to physical confinement (e.g., see Ghezlbash and Molnar 2025).²⁶ These transitions are not always clearly delineated. They form a continuum in which the intensity of control varies, but the underlying logic remains consistent. These systems are deeply entangled with racialized forms of governance, reinforcing existing inequalities even as they present themselves as neutral tools (Parmar 2019).²⁷ What surfaces, then, is a system in which detention is both a site and a symptom of

²³ Bosworth, M. and Guild, M., 2008. Governing through migration control: Security and citizenship in Britain. *The British Journal of Criminology*, 48(6), pp. 703–719.

²⁴ Milivojevic, S., 2019. *Border policing and security technologies: Mobility and proliferation of borders in the Western Balkans*. London: Routledge. See also Milivojevic, S., 2021. *Crime and punishment in the future internet: Digital frontier technologies and criminology in the twenty-first century*. London: Routledge.

²⁵ Singler, S., 2025. *Outsourcing Crimmigration Control: Digital Borders, the IOM, and Biometric Statehood*. Oxford: Oxford University Press. [1]

²⁶ Ghezlbash, D. and Molnar, P., 2025. *From surveillance to empowerment: Advancing the responsible use of technology in alternatives to detention*. Sydney: Kaldor Centre for International Refugee Law. Available at: <https://www.unsw.edu.au/content/dam/pdfs/law/kaldor/2025-09-technology-in-alternatives-to-detention.pdf> [Accessed 29 May 2026]

²⁷ Parmar, A., 2019. Policing migration and racial technologies. *The British Journal of Criminology*, 59(4), pp.938–957.

broadier carceral dynamics (see also Pruss et al. 2025).²⁸ Migration governance has come to rely on punishment practices, even in the absence of crime, and these practices are increasingly mediated through technological systems that extend their reach and normalize their application. These practices of carceral border necrotechnics organize a spectrum of confinement, within which detention represents one of the most visible manifestations of violence.

However, if immigration detention functions as punishment, but is not subject to the constraints of criminal law, what forms of accountability are possible, if any? Decisions are made through administrative processes that are difficult to challenge, and increasingly, through automated systems that obscure the basis on which they operate. The result is a form of carceral governance that is both pervasive and elusive, in which the mechanisms of control are distributed across institutions, infrastructures, and technologies, making them harder to identify, contest, and resist (more broadly see Hall, L.B. and Clapton, W., 2021).²⁹

AUTOMATION AND THE EXPANSION OF RACIALIZED CARCERAL POWER

If immigration detention reveals the carceral character of contemporary border regimes, the integration of AI and automated systems transforms how this carceral power is organized, extended, and enacted. These technologies do not replace existing forms of carceral control. Rather, they intensify and reconfigure them, embedding carceral logics within data-driven infrastructures that operate across space and time (Benjamin 2019, Noble 2021, Pruss et al. 2025).³⁰ In doing so, they enable new forms of governance in which classification, surveillance, and confinement are not

²⁸ Pruss, D., Pullen-Blasnik, H., Stevens, N., Rahman, S., Belitz, C., Stapleton, L., Dharmaraj, M.G., Aizeki, M., Molnar, P., Pinch, A. and Ryan, N., 2024. *Prediction and Punishment: Critical Report on Carceral AI*. SSRN Research Network. Available at: <https://ssrn.com/abstract=5017321> [Accessed 29 May 2026].

²⁹ Hall, L.B. and Clapton, W., 2021. Programming the machine: gender, race, sexuality, AI, and the construction of credibility and deceit at the border. *Internet Policy Review*, 10(4), pp.1-23.

³⁰ Pruss, D., Pullen-Blasnik, H., Stevens, N., Rahman, S., Belitz, C., Stapleton, L., Dharmaraj, M.G., Aizeki, M., Molnar, P., Pinch, A. and Ryan, N., 2024. *Prediction and Punishment: Critical Report on Carceral AI*. SSRN Research Network. Available at: <https://ssrn.com/abstract=5017321> [Accessed 29 May 2026].

discrete practices, but mutually reinforcing processes. At the center of this transformation is the increasing reliance on systems that sort, predict, and act upon populations deemed risky, dangerous, or fraudulent. Risk assessment tools, biometric databases, and predictive analytics are used to determine who is subject to heightened scrutiny, who may be detained, and who is allowed to move freely. These systems often operate prior to, or in place of, formal decision-making processes, shaping outcomes before they are articulated as decisions (Milivojevic 2019, 2021; Singler 2025).³¹

What distinguishes these developments is their capacity to integrate multiple forms of control into a single, continuous system. People may be registered through biometric systems, assessed through risk models, tracked through digital surveillance, and, where deemed necessary, confined within detention facilities (Molnar, 2024).³² These processes are not sequential stages, but rather overlapping mechanisms that together produce a form of governance in which movement is continuously monitored and managed. Such systems blur the boundaries between policing, security, and administrative governance, creating hybrid regimes in which the distinction between criminal justice and migration control becomes increasingly difficult to sustain (Parmar 2019).³³ Within this assemblage, punishment is no longer limited to the moment of detention or deportation but diffused and distributed across a range of practices that shape how individuals move, how they wait, and how they are perceived. The denial of mobility, the imposition of uncertainty, the constant possibility of surveillance all become forms of carceral control in their own right (see also Fabbini et al. 2022).³⁴ At the same time, these practices remain deeply racialized, as the categories through which individuals are sorted continue to reflect broader patterns of inequality (Achiume 2021; Browne 2012,

³¹ Milivojevic, S., 2019. *Border policing and security technologies: Mobility and proliferation of borders in the Western Balkans*. London: Routledge. See also Milivojevic, S., 2021. *Crime and punishment in the future internet: Digital frontier technologies and criminology in the twenty-first century*. London: Routledge; Singler, S., 2025. *Outsourcing Crimmigration Control: Digital Borders, the IOM, and Biometric Statehood*. Oxford: Oxford University Press.

³² Molnar, P., 2024. *The walls have eyes: Surviving migration in the age of artificial intelligence*. New York: [The New Press](#).

³³ Parmar, A., 2019. Policing migration and racial technologies. *The British Journal of Criminology*, 59(4), pp.938-957.

³⁴ Fabbini, G., Ferraris, V. and Sbraccia, A., 2022. Migrazioni, criminalità, criminalizzazione. In: T. Pitch, ed. *Devianza e questione criminale: Temi, problemi e prospettive*. Roma: Carocci, pp. 81-102.

see also Lowe et al 2017).³⁵ The result is a system in which racialized populations are not only more likely to be identified as risks, but are also more likely to experience the cumulative effects of carceral governance.

This is where the concept of border necrotechnics becomes particularly useful. It allows us to see how these dynamics are not simply parallel processes of racialization on one hand, punishment on the other, but are co-constitutive elements of a single system that determines who is worthy of life. Automated classification does not merely identify who is suspicious (Borrelli et al. 2022).³⁶ It helps determine who is exposed to confinement, precarity, and, in some contexts, death that is deemed a necessary part of the system of control. Carceral practices, in turn, reinforce the data on which these systems rely, creating feedback loops in which patterns of control are continuously reproduced and intensified (Pagan et al. 2023).³⁷ The expansion of automated systems thus does not mark a departure from earlier forms of border control. Rather, it represents their consolidation within infrastructures that are more pervasive, more continuous, and more difficult to contest. Control is no longer confined to specific sites, such as checkpoints or detention centers, but is distributed across networks of data and surveillance that follow individuals across borders and through time (see Brandariz et al. 2025).³⁸ The carceral border is therefore not only a place of confinement, but the very condition of governance, one that is increasingly mediated through technologies that both reflect and reproduce the inequalities on which it depends (see also McGuire 2012).³⁹

³⁵ Lowe, M.R., Stroud, A. and Nguyen, A., 2017. Who looks suspicious? Racialized surveillance in a predominantly white neighborhood. *Social Currents*, 4(1), pp. 34–50.

Browne, S., 2012. Race and surveillance. In: K. Ball, K.D. Haggerty and D. Lyon, eds. *Routledge handbook of surveillance studies*. London: Routledge, pp. 72–79.

³⁶ Borrelli, L.M., Lindberg, A. and Wyss, A., 2022. States of suspicion: How institutionalised disbelief shapes migration control regimes. *Geopolitics*, 27(4), pp. 1025–1041.

³⁷ Pagan, N., Baumann, J., Elokda, E., De Pasquale, G., Bolognani, S. and Hannák, A., 2023. A classification of feedback loops and their relation to biases in automated decision-making systems. In: *Proceedings of the 3rd ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization*. New York: ACM, pp. 1–14

³⁸ Brandariz, J.A., Fabini, G., Fernández-Bessa, C. and Ferraris, V. eds., 2025. *Border Criminologies from the periphery: Cross-national conversations on bordered penalty*. London: Taylor & Francis.

³⁹ McGuire, M., 2012. *Technology, crime and justice: The question concerning technomia*. Abingdon: Willan.

DIFFUSION OF RESPONSIBILITY AND THE DISAPPEARANCE OF THE PUNISHER

Immigration detention also reveals how border governance operates as punishment without crime, and automated systems extend this carceral logic across space and time. A further transformation lies in how responsibility for this punishment is organized. In traditional criminal justice systems, coercive power is, at least in principle, attributable: a sentence is imposed by a judge, enforced by identifiable institutions, and bounded by legal frameworks that allow for challenge, appeal, and review. Even where these systems are deeply unequal, they retain a recognizable structure of accountability.

Yet at the contemporary digital border, this structure becomes increasingly difficult to discern. Decisions that shape mobility and potential carcerality are rarely located in a single moment or inhere to one actor. Instead, they emerge through the interaction of multiple systems: risk assessments increasingly generated by an algorithms, classifications embedded in multi-jurisdictional databases, administrative decisions made by caseworkers, and enforcement practices carried out by state and non-state actors (see Borelli 2025).⁴⁰ The result is a form of governance in which responsibility is dispersed across infrastructures that are at once interconnected and opaque, and therefore very difficult to contest.

This diffusion can be understood, in part, through Foucault's account of governmentality, in which power operates not solely through sovereign command, but through dispersed techniques that structure the conduct of individuals and populations (Foucault 1991).⁴¹ Border governance, in this sense, does not simply prohibit or permit movement. Rather, it organizes the conditions under which movement becomes possible, shaping behavior through systems that appear administrative, technical, or routine (see also Walters 2015; Tazzioli and Walters 2016).⁴² Individuals adjust their routes, their timing, their visibility in response to these systems,

⁴⁰ Borrelli, L.M., 2025. Making migrants deportable: The internalization of restrictive policies through transferred responsibility and borrowed legitimacy. *Society*, 62(4), pp. 462–472. See also De Genova, N., 2012. Bare life, deportability, and the sovereignty of the state. *Borderlands e-journal*, 11(1), pp. 1–21.

⁴¹ Foucault, M., 1991. Governmentality. In: G. Burchell, C. Gordon and P. Miller, eds. *The Foucault effect: Studies in governmentality*. London: Harvester Wheatsheaf, pp. 87–104.

⁴² Tazzioli, M. and Walters, W., 2016. The sight of migration: Governmentality, visibility and Europe's contested borders. *Global Society*, 30(3), pp. 445–464; Walters, W., 2015.

internalizing their constraints even in the absence of direct coercion. Foucault's notion of the panopticon is also instructive here, not as a literal architectural model, but as a way of understanding how surveillance produces self-regulation (Foucault 1977).⁴³ At the border, however, this logic is extended and transformed. Surveillance is no longer confined to a single site, but distributed across networks of sensors, databases, surveillance monitoring, and predictive systems. Individuals are not only potentially visible, they are continuously rendered as data points (Molnar 2024),⁴⁴ their movements tracked, recorded, and assessed across time. The effect is not only that people may be watched, but that they are governed through the anticipation of being watched, shaping their actions in relation to systems that remain largely opaque (see Chambers et al 2021).⁴⁵

These dynamics are particularly visible in the contemporary Greek refugee camp system, where carceral logics are embedded within infrastructures that combine physical containment with digital monitoring. So-called Closed Controlled Access Centres (CCACs) or Multi-Purpose Reception and Identification Centers (MPRICs) on islands such as Samos, Lesbos, and Kos integrate biometric entry systems, surveillance cameras, motion sensors, and access controls into the everyday management of people seeking asylum (e.g., see Systems of Systems 2026).⁴⁶ Movement in and out of the camp is regulated through cards and checkpoints, while internal movement is also subject to monitoring through drone surveillance and other types of cameras. Phones are routinely confiscated and checked, with Israeli surveillance software found on the phones of Samos camp residents (I Have Rights and BVMN 2025; Loewenstein 2025).⁴⁷ What

Reflections on migration and governmentality. *Movements: Journal for Critical Migration and Border Regime Studies*, 1(1), pp. 1–13.

⁴³ Foucault, M., 1977. Discipline and punish: The birth of the prison. Translated from the French by A. Sheridan. New York: Vintage Books.

⁴⁴ Molnar, P., 2024. The walls have eyes: Surviving migration in the age of artificial intelligence. New York: The New Press.

⁴⁵ Chambers, S.N., Boyce, G.A., Launius, S. and Dinsmore, A., 2021. Mortality, surveillance and the tertiary 'funnel effect' on the U.S.–Mexico border: A geospatial modeling of the geography of deterrence. *Journal of Borderlands Studies*, 36(3), pp.443–468

⁴⁶ System of Systems, 2026. Refugee Containment in Greece's Closed Controlled Access Centres. *Failed Architecture* [Podcast]. 19 January. Available at: <https://failedarchitecture.com/podcast/refugee-containment-in-greeces-closed-controlled-access-centres/> [Accessed 29 May 2026].

⁴⁷ I Have Rights and Border Violence Monitoring Network (BVMN), 2025. *Controlled and Confined: Unveiling the Impact of Technology in the Samos Closed Controlled Access*

materializes is a technologically mediated environment in which visibility, access, and mobility are continuously structured through systems that are difficult to interrogate or contest, in what Manek calls a ‘torturing environment and a necropolitical space of uncare’ (2025).⁴⁸ Residents must navigate not only physical barriers, but administrative and digital ones, where permissions, restrictions, and classifications are embedded within systems that operate beyond their immediate comprehension.

This diffusion is not incidental. It is a defining feature of how contemporary border regimes operate. The outsourcing and privatization of digital border control technologies distribute authority across a network of actors, including technology firms, contractors, and international agencies (Sigler 2025, see also Menz 2011, Molnar 2021; Flynn, M. and Cannon, C.J., 2009).⁴⁹ These actors shape the design and implementation of systems that govern mobility, yet are often shielded from direct accountability through claims of technical neutrality or proprietary secrecy. These technological systems enable states to extend their reach while simultaneously obscuring the mechanisms through which decisions are made (Milivojevic 2019).⁵⁰ Within this diffusion, the figure of the ‘punisher’ begins to disappear. There is no single authority that can be held responsible for the outcomes produced by the system. A person may be detained because a risk score flagged them as high-risk, because a biometric match linked them to a prior encounter, because a database categorized them in a particular way, or because a caseworker followed a protocol shaped by

Centre. Samos: I Have Rights. Available at: https://ihaverights.eu/wp-content/uploads/2025/01/FINAL_IHR-BVMN_TECHNOLOGIES-REPORT.pdf; Davies, D. (dir.) and Loewenstein, A., 2025. *The Palestine Laboratory* [Documentary series, 2 parts]. Al Jazeera English / Black Leaf Films. Broadcast 30 January and 6 February 2025. Available at: <https://www.aljazeera.com/program/featured-documentaries/2025/1/30/the-palestine-laboratory>

⁴⁸Manek, J., 2025. No camp is a “good camp”: the closed controlled access centre on samos as a torturing environment and necropolitical space of uncare. *Antipode*, 57(1), pp.324-349.

⁴⁹Menz, G., 2011. Neo-liberalism, privatization and the outsourcing of migration management: a five-country comparison. *Competition & Change*, 15(2), pp.116-135; Molnar, P., 2021. Surveillance sovereignty: Migration management technologies and the politics of privatization. In *Migration, security, and resistance* (pp. 66-82). Routledge. Flynn, M. and Cannon, C.J., 2009. *The Privatization of Immigration Detention: Towards a Global View*. Working Paper. Global Detention Project. Available at: <https://ssrn.com/abstract=1519521>

⁵⁰Milivojevic, S., 2019. *Border Policing and Security Technologies: Mobility and Proliferation of Borders in the Western Balkans*. London: Routledge.

these systems. Each decision appears partial, technical, or procedural (see also Ahmed et al 2024).⁵¹ Taken together, however, they produce outcomes that are experienced as deeply coercive.

In the United States, similar dynamics can be observed within the immigration detention estate, where digital systems increasingly mediate decisions about detention, release, and monitoring. Risk assessment tools are used to evaluate whether individuals should be detained or placed under alternatives such as electronic monitoring, while biometric databases and data-sharing systems link immigration enforcement with broader policing infrastructures (see also Glouftisios 2021).⁵² Programs involving ankle monitors, smartphone tracking applications, and remote check-ins extend forms of surveillance beyond detention facilities, creating what Tazioli refers to as ‘a continuum of confinement’ (Tazioli 2024).⁵³ Individuals may no longer be physically detained, but still remain subject to constant monitoring, their movements, and compliance tracked through systems that operate continuously and often without clear avenues for contestation (Ghezelbash and Molnar 2023).⁵⁴

This transformation has significant implications for how harm is understood and contested. When responsibility is diffused, it becomes more difficult to identify the source of injustice. Legal challenges must navigate complex systems in which decision-making is distributed and often undocumented. Individuals may not know why they have been flagged, detained, or denied entry, and even where explanations are provided, they are frequently framed in technical terms that obscure the underlying logic. As a result, the capacity to contest decisions is limited, not only by formal barriers, but by the epistemic opacity of the systems themselves (see also

⁵¹ Ahmed, S.S., Rauf, S. and Ashraf, H., 2025. Human Rights Risks in Tech-Enhanced Incarceration: A Comparative Analysis. *International Journal of Human and Society (IJHS)*, 5(2), pp. 304–311. Miranda, D., 2024. Carceral surveillance: Data flows within and beyond prison walls. *Incarceration*, 5, pp.1–19. <https://doi.org/10.1177/26326663241237966>

⁵² Glouftisios, G., 2021. Governing border security infrastructures: Maintaining large-scale information systems. *Security Dialogue*, 52(5), pp.452–470.

⁵³ Tazzioli, M., 2024. Harm beyond surveillance: rethinking refugees’ carcerality through the confinement continuum. In M. Bosworth, A. Parmar and Y. Vázquez (eds.) *Handbook on Border Criminology*. Northampton: Edward Elgar Publishing, pp.297–309.

⁵⁴ Ghezelbash, D. and Molnar, P., 2025. *From Surveillance to Empowerment: Advancing the Responsible Use of Technology in Alternatives to Detention*. Sydney/Geneva/Toronto: Kaldor Centre for International Refugee Law (UNSW Sydney), International Detention Coalition, and Refugee Law Lab (York University). Available at: <https://www.kaldorcentre.unsw.edu.au/publication/surveillance-empowerment>

Jefferis 2021).⁵⁵ At the same time, this diffusion does not diminish the racialized character of border governance. Rather, it reinforces it through repeated performance in what Mainwaring and Silverman refer to as ‘detention-as-spectacle’ (2017),⁵⁶ ensnaring bodies that have been coded as racialized. The categories and datasets that underpin the automated systems of immigration carcerality continue to reflect broader patterns of inequality, even as the processes through which they are applied become less visible. Racialized distinctions are thus reproduced through mechanisms that appear technical rather than political, making them more difficult to identify and challenge. The disappearance of an identifiable punisher is therefore not a neutral development. Rather, it is a deliberate logic, one that enables the continuation of unequal treatment under conditions of reduced accountability, creating what Truong terms as the ‘new subaltern’ class of the dispossessed (2011).⁵⁷

In this system of carceral border necrotechnics, harm is produced and distributed across systems that operate through classification, prediction, and control. Exposure to confinement, precarity, and death is not always the result of a single decision. It emerges through the cumulative effects of infrastructures that shape how individuals are seen, sorted, and acted upon (Saadi et al 2022).⁵⁸ It is a form of power that is at once governmental, racial, and carceral; diffuse in its organization, normalized through routine practices, and material in its consequences (see also Rosenbaum 2021).⁵⁹ The disappearance of the punisher does not mean that punishment ceases to exist. Rather, it signifies that that punishment is reconfigured as a property of the system itself. The border no longer needs a visible agent of coercion. It operates through architectures that produce

⁵⁵ Jefferis, D.C., 2020. Constitutionally unaccountable: Privatized immigration detention. *Indiana Law Journal*, 95(1), p 145.

⁵⁶ Mainwaring, C. and Silverman, S.J., 2017. Detention-as-spectacle. *International Political Sociology*, 11(1), pp.21-38.

⁵⁷ Truong, T.D., 2011. The governmentality of transnational migration and security: The making of a new subaltern. In T.D. Truong and D. Gasper (eds.) *Transnational Migration and Human Security: The Migration-Development-Security Nexus*. Hexagon Series on Human and Environmental Security and Peace, vol. 6. Berlin/Heidelberg: Springer, pp.23–37.

⁵⁸ Saadi, A., Patler, C. and De Trinidad Young, M.E., 2022. Cumulative risk of immigration prison conditions on health outcomes among detained immigrants in California. *Journal of Racial and Ethnic Health Disparities*, 9(6), pp.2518-2532.

⁵⁹ Rosenbaum, C.L., 2021. Systemic Racism and Immigration Detention. *Seattle UL Rev.*, 44, p.1125.

constraint, uncertainty, and exposure as routine outcomes of governance (see also Pugliese 2008).⁶⁰ And it is precisely this distributed, opaque configuration that makes contemporary border regimes particularly resistant to challenge.

THE POLITICAL ECONOMY OF CARCERAL BORDERS: PROFITING FROM CONFINEMENT AND EXPOSURE

The expansion of carceral border infrastructures cannot be understood solely in terms of governance or security. It must also be situated within a broader political economy in which confinement, surveillance, and control are not only instruments of state power, but sites of capitalist accumulation (see Chacon 2017; also Hiemstra and Conlon 2017).⁶¹ While the following chapter expands the analysis of into the border industrial complex, immigration detention, in particular, is embedded within networks of public and private actors whose interests are aligned with the continued expansion of border enforcement (see also Leese, Noori, and Scheel, 2022).⁶²

For example, in the United States, the immigration detention system is deeply entangled with private prison corporations, which operate facilities under government contracts and generate revenue based on the number of individuals detained (Martin 2017; Esien 2025; Villa-Nicholas, 2023).⁶³

⁶⁰ Pugliese, J., 2008. The tutelary architecture of immigration detention prisons and the spectacle of 'necessary suffering'. *Architectural Theory Review*, 13(2), pp.206-221.

⁶¹ Chacón, J.M., 2017. Privatized immigration enforcement. *Harvard Civil Rights-Civil Liberties Law Review*, 52, p.1. See also Hiemstra, N. and Conlon, D., 2017. Beyond privatization: Bureaucratization and the spatialities of immigration detention expansion. *Territory, Politics, Governance*, 5(3), pp.252-268. Zyfi, J.O.N.A. and Macklin, A.U.D.R.E.Y., 2022. The creeping privatization of immigration detention in Canada. *Changing of the guards: Private influences, privatization, and criminal justice in Canada*, pp.247-289.

⁶² Leese, M., Noori, S. and Scheel, S., 2022. Data matters: The politics and practices of digital border and migration management. *Geopolitics*, 27(1), pp.5-25. <https://doi.org/10.1080/14650045.2021.1940538>

⁶³ Martin, L., 2017. Discretion, contracting and commodification: Privatisation of US immigration detention as a technology of government. In D. Conlon and N. Hiemstra (eds.) *Intimate Economies of Immigration Detention: Critical Perspectives*. Abingdon: Routledge, pp.32-50. Eisen, L.B., 2025. Private prison companies' enormous windfall: Who stands to gain as ICE expands. *Brennan Center for Justice*, 1 October. Available at: <https://www.brennancenter.org/our-work/analysis-opinion/private-prison-companies-enormous-windfall-who-stands-gain-ice-expands>; Villa-Nicholas, M. (2023) *Data Borders: How Silicon Valley is building an industry around immigrants*. Oakland, California: University of California Press.

This model creates material incentives for the expansion of detention capacity, even as the legal justification for detention remains administrative rather than punitive. Similarly, the growing use of electronic monitoring systems such as ankle bracelets, smartphone tracking applications, biometric verification tools has produced new markets in which private companies profit from the continuous surveillance of people on the move (Ghezelbash and Molnar 2025; Macmillan and Foster-Frau 2025).⁶⁴ Individuals who are not physically detained may nonetheless be subject to forms of digital confinement, where their movements are tracked and regulated through systems that operate beyond the walls of traditional institutions. In the European context, the development of high-tech refugee camps and border surveillance infrastructures has likewise involved significant collaboration with private technology firms (Lethbridge 2017; see also Molnar 2021 and 2024).⁶⁵ Systems deployed in Greek camps, including biometric access controls and integrated surveillance platforms, are often developed and maintained through contracts with private actors, whose expertise is framed as necessary for managing complex migration flows. These arrangements not only extend the reach of the state but also redistribute responsibility in ways that obscure accountability, while simultaneously creating new opportunities for profit (Singler 2025, Milivojevic 2019; Lalic and Seranic 2019; Molnar 2021).⁶⁶

This type of political economy not only that it commodifies control, but also that it does so through systems that are directly tied to the

⁶⁴ MacMillan, D. and Foster-Frau, S., 2025. ICE moves to shackle some 180,000 immigrants with GPS ankle monitors. *The Washington Post*, 24 July. Available at: <https://www.washingtonpost.com/immigration/2025/07/24/ice-check-in-ankle-monitor-immigrants/>

⁶⁵ Lethbridge, J., 2017. *Privatisation of Migration and Refugee Services and Other Forms of State Disengagement*. Ferney-Voltaire: Public Services International (PSI) and European Federation of Public Service Unions (EPSU). Available at: https://www.epsu.org/sites/default/files/article/files/PSI-EPSU%20Privatisation%20of%20Migration%20%26%20Refugee%20Services_EN.pdf; Molnar, P., 2021. Surveillance sovereignty: Migration management technologies and the politics of privatization. In I. Atak and G. Hudson (eds.) *Migration, Security, and Resistance: Global and Local Perspectives*. London: Routledge, pp.66–82; Molnar, P., 2024. *The Walls Have Eyes: Surviving Migration in the Age of Artificial Intelligence*. New York: The New Press.

⁶⁶ Lalić, V. And Čeranić, P., 2019. Securitization Of Migration In European Union And The Role Of Private Security Firms. *Security Dialogues*, 10(1). Molnar, P., 2021. Surveillance sovereignty: Migration management technologies and the politics of privatization. In I. Atak and G. Hudson (eds.) *Migration, Security, and Resistance: Global and Local Perspectives*. London: Routledge, pp.66–82

management of life and death. The precariousness of people on the move, including their exposure to environmental risk, confinement in camps, vulnerability to detention and deportation, generates demand for technologies that promise to manage these conditions more efficiently. In turn, the data generated through these systems such as biometric information, movement patterns, or risk profiles, becomes a resource that can be leveraged to develop and refine new tools (Witteborn 2022; see also Broeders and Dijstelbloem, 2016; Frowd, 2025; Ajana, 2019).⁶⁷ Human vulnerability is thus rendered productive in a growing and lucrative border industrial complex (Miller 2009).⁶⁸ This dynamic is central to understanding border necrotechnics. The infrastructures that distribute exposure to harm are not simply reactive. Rather, they are sustained through feedback loops of value that make their expansion desirable. Surveillance technologies that redirect movement into more dangerous terrain, detention systems that prolong confinement, and predictive tools that intensify scrutiny all contribute to environments in which certain populations are systematically exposed to conditions that threaten their ability to live. At the same time, these conditions generate the very data and demand that sustain the system (Nyabola 2023). The result is a feedback loop in which the management of mobility is inseparable from the production of value (Gilmore 2007).⁶⁹

The carceral border is therefore a site where life and death are differentially organized in ways that are both politically and economically consequential. Those who are subjected to these systems experience their effects as confinement, uncertainty, and, in some cases, fatal exposure. Those who operate within them such as states, contractors, and technology firms

⁶⁷ Witteborn, S., 2022. Digitalization, digitization and datafication: the "three D" transformation of forced migration management. *Communication, Culture and Critique*, 15(2), pp.157-175. Broeders, D. and Dijstelbloem, H., 2015. The Datafication of mobility and migration management: The mediating state and its consequences. In *Digitizing identities* (pp. 242-260). Routledge. For the role of international organizations, see Frowd, P.M., 2025. The 'datafication' of borders in global context: The role of the International Organization for Migration. *Geopolitics*, 30(4), pp.1635-1653. Ajana, B., 2019. Digital biopolitics, humanitarianism and the datafication of refugees. In E. Cox, D. Farrier, V. Kennedy, L. Reinhardt and A. Woolley (eds.) *Refugee Imaginaries: Research Across the Humanities*. Edinburgh: Edinburgh University Press, pp.463-479.

⁶⁸ Miller, T., 2019. *Empire of borders: The expansion of the US border around the world*. Verso Books.

⁶⁹ Gilmore, R.W., 2007. *Golden Gulag: Prisons, Surplus, Crisis, and Opposition in Globalizing California*. Oakland: University of California Press.

derive forms of authority, legitimacy, and ultimately, profit. The persistence of harmful technologies, even in the face of well-documented failures, can thus be understood not as a problem of misalignment or misunderstanding, but as a reflection of the true logics and corporate interests that underpin their continued use (see also Ackerman and Furman 2013).⁷⁰

CONCLUSION: TECHNOCARCERAL HARMS AND FUTURES DEFERRED

This chapter has argued that contemporary border regimes are best understood as forms of techno-carceral governance that operate beyond the formal boundaries of criminal law (see also Gidaris 2020).⁷¹ Immigration detention, as well as the broader infrastructures within which it is embedded, reveals how individuals may be subjected to confinement and control not for what they have done, but for what they represent within systems of risk and exclusion. The integration of automated technologies intensifies this dynamic, embedding carceral logics within infrastructures that are continuous, distributed, and difficult to contest. These systems do not merely assist in decision-making. Instead, they reshape the conditions under which decisions are made, often pre-empting formal processes and obscuring the basis on which individuals are classified and treated. At the same time, these processes remain deeply racialized, drawing on data and categories that reflect broader patterns of inequality, even as they present themselves as neutral and objective. What emerges are bordering practices that governs actively through the differential organization of life and death. Some individuals are permitted to move with relative ease, while others are subjected to conditions of waiting, confinement, and exposure that constrain their ability to live (see broadly Manderscheid 2016).⁷² In some contexts, this exposure takes the form of slow, cumulative harm, as in detention systems and camps where time is infinitely stretched and

⁷⁰ Ackerman, A. R. and Furman, R. (2013) 'The criminalization of immigration and the privatization of the immigration detention: Implications for justice', *Contemporary Justice Review*, 16(2), pp. 251–263.

⁷¹ Gidaris, C., 2020. *Re-imagining Everyday Carcerality in an Age of Digital Surveillance*. Doctoral dissertation, McMaster University. Available at: <https://macsphere.mcmaster.ca/handle/11375/26082>

⁷² Manderscheid, K., 2016. Unequal mobilities. In T. Ohnmacht, H. Maksim and M.M. Bergman (eds.) *Mobilities and Inequality*. Abingdon: Routledge, pp.27–50.

futures are deferred indefinitely. In others, it manifests more directly, as in border zones where surveillance and deterrence strategies produce conditions under which death becomes more likely.

Border necrotechnics provides a framework for understanding these dynamics as part of a single system, where classification, surveillance, and confinement are translated into differentiated exposures to life and death, and these exposures are distributed through infrastructures that are both material and opaque. Crucially, these processes are sustained not only through political narratives of security and risk, but also through specific economic arrangements that render them productive and lucrative. To understand the contemporary border, then, is to examine how systems of governance organize the conditions under which life is sustained, suspended, or extinguished, often without a crime, without a sentence, and even without a clearly identifiable agent of responsibility (see also Leurs 2020; Walia 2021).⁷³

⁷³Leurs, K., 2020. Migration infrastructures. In K. Smets, K. Leurs, M. Georgiou, S. Witteborn and R. Gajjala (eds.) *The SAGE Handbook of Media and Migration*. London: SAGE Publications, pp.91–102. <https://doi.org/10.4135/9781526476982> Walia, H., 2021. *Border and rule: Global migration, capitalism, and the rise of racist nationalism*. Haymarket books.

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The Border-Industrial Complex: Corporate Power and the Procurement of Life and Death

Abstract This chapter analyzes the structural forces driving the rapid expansion of border AI technologies. It argues that the deliberate entanglement between states and private technology firms forms a deadly *border-industrial complex*: a network of defense contractors, surveillance companies, data brokers, and venture-backed startups profiting from the criminalization of mobility. I frame these practices as a form of *digital colonialism*: the extraction, commodification, and control of data from marginalized populations to serve state and corporate interests. Bodies on the move become sources of biometric value: their movements generate data trails used to refine predictive systems, and their vulnerabilities create markets for new technologies. Building on Ruth Wilson Gilmore's analysis of racial capitalism, I argue that profit incentives and racialized policing converge at the border, leading to deadly outcomes. People on the move become both a security threat and a revenue stream, justifying continual expansion of surveillance infrastructures. This chapter also examines secrecy and opacity at the center of this lucrative industrial complex. Corporations routinely invoke trade secrets to block access to algorithmic logic, data sources, and error rates. These practices shield companies from liability and prevent meaningful public oversight. Meanwhile, states benefit from this opacity, using corporate discretion to evade human rights obligations and legal scrutiny.

Keywords Border-industrial complex • Digital colonialism • Biometrics
• Racial capitalism • Corporate opacity



AI Surveillance Tower by Israeli Elbit System scans the US Sonoran Desert | P. Molnar | 2024

In a generic corporate hotel in Athens, Greece, rows and rows of booths stretch across the brightly lit exhibition hall, each marked by polished signage, swag, and carefully arranged displays. You can pick up some free pens and notebooks with logos by companies like Elbit Systems, Celebrite, Thalys, and Anduril. Screens loop promotional videos: aerial footage of coastlines, thermal imaging of bodies moving across dark terrain, animated interfaces showing streams of data being processed, sorted, flagged. One booth banner reads: 'Efficiency, Security, Innovation.' Here, human movement is clearly rendered as a problem to be solved.

A drone sits on a raised platform illuminated by some sort of spotlight, its black frame matte and angular, designed to suggest both precision and discretion. It is actually much smaller than I thought it would be, almost like something you may pick up at a toy store. Beside it, a representative explains its

capabilities in measured terms: range, endurance, detection accuracy. The demonstration video shows the drone scanning some sort of desert landscape (Palestine? Arizona?). Small figures appear as heat signatures on a screen. 'Kinda look like bugs!' says the representative. A red box forms around each body, blinking in and out. The footage pauses just before anything further happens.

At another booth, a biometric company displays a handheld device capable of capturing fingerprints and facial images in seconds. A poster of a blond woman with a ponytail, her iris being scanned, is an interesting choice of imagery here. The pitch is straightforward: rapid identification, seamless integration with existing databases, real-time verification. Someone jokes about how useful it would be in airports. Another asks whether it can function in 'challenging environments.' The representative confirms has already been tested in multiple regions.

From booth to booth, conversations move between technical details and broader strategy. A panel discussion begins in a conference room nearby, where speakers from the Greek coast guard, European policy makers, and technical experts describe the future of border management as a matter of interoperability and data fusion. The emphasis is on bringing together different systems to create a unified picture of movement. Questions from the audience focus on scalability, cost, and implementation timelines. There is little discussion of those who will be subject to these systems, except as abstract categories such as 'flows,' 'risks,' 'mitigating threats.' A group of attendees stands near a coffee station, discussing recent deployments while trying to not get powdered sugar on their polyester suits from the pile of dangerously sweet kourabiades, a popular Greek cookie. One refers to 'pressure from the south,' another to 'managing volumes,' all a convincing performance of neutrality with a cookie in hand.

Across the trade floor, contracts are discussed, partnerships proposed, demonstrations scheduled. The atmosphere is one of opportunity. Innovation is framed as necessary, inevitable, and, above all, valuable. After all, the border is not only a site of control. It is a lucrative market.¹

Contemporary border regimes operate through infrastructures of surveillance, classification, and prediction. But what are conditions under which these infrastructures are produced, maintained, and expanded? That is, if the border is increasingly constituted through complex technological systems such as biometric databases, predictive models, sensing networks, how are these systems brought into being, and through what

¹ This vignette captures my visit to the World Border Security Congress hosted in Athens Greece in 2021, also informed by 5 other visits to DEFEA: Defence Exhibition Athens and other private sector conferences and trade fairs between 2021 and 2025.

configurations of power do they persist? Any analysis of digital border governance would be incomplete without examining the broader political economy that situates the technological transformation within broader circuits of capital, private sector expertise, and profit driven authority (Sassen 2014; Mezzadra and Neilson 2013).²

This chapter analyzes these structural forces driving the rapid expansion of border AI technologies. It argues that the entanglement between states and private technology firms forms a deeply entangled border-industrial complex (Miller 2019, see also Kawakubo 2020):³ a network of defense contractors, surveillance companies, data brokers, and venture-backed startups profiting from the criminalization of mobility. This chapter begins by mapping this ecosystem. Major players include behemoth global private sector actors Palantir, Anduril, Elbit Systems, Thales, Idemia, Amazon Web Services, as well as newer smaller startups specializing in biometrics, autonomous sensing, and risk analytics. These firms market their tools as efficient, objective, and necessary, shaping policy agendas through lobbying, public-private partnerships, and so-called pilot programs that circumvent democratic oversight (e.g., see Molnar and Gill 2018, Mantelero, A. and Vaciago, G., 2013).⁴

Building on analyses of racial capitalism (see Gilmore 2007, Danewid 2023, Wong 2022),⁵ this chapter argues that profit incentives and racialized policing converge at the border, leading to deadly outcomes. In what Clif terms ‘authoritarian neoliberalism’ (2019),⁶ people on the move become both a security threat and a revenue stream, justifying continual expansion of surveillance infrastructures (see also Singler 2025).⁷ This

² Sassen, S., 2014. *Expulsions: Brutality and complexity in the global economy*. Harvard University Press; Mezzadra, S. and Neilson, B., 2013. *Border as Method, or, the Multiplication of Labor*. Duke University Press.

³ Kawakubo, F., 2020. Privatizing Border Security: Emergence of the “Border-Industrial Complex” and Its Implications. *Public Voices*, 17(1).

⁴ Mantelero, A. and Vaciago, G., 2013. The ‘dark side’ of big data: Private and public interaction in social surveillance. *Computer Law Review International*, 14(6), pp.161–169.

⁵ Danewid, I., 2023. Resisting racial capitalism: An antipolitical theory of refusal. Cambridge University Press; Wong, V., 2022. Racial capitalism with Chinese characteristics: Analyzing the political economy of racialized dispossession and exploitation in Xinjiang. *African Journal of International Economic Law*, 3, pp.2–35.

⁶ Smith, C., 2019. ‘Authoritarian neoliberalism’ and the Australian border-industrial complex. *Competition & Change*, 23(2), pp.192–217.

⁷ Singler, S., 2025. Surveillance evangelism: Private technology companies and the digital futures of crimmigration control. *Theoretical Criminology*, 29(3), pp.365–386.

chapter also examines secrecy and opacity at the center of this lucrative industrial complex (see also Valdivia, Aradau, Blanke, and Perret 2022 for a discussion of the tension between private sector lauding its wares yet reinforcing opacity of its projects).⁸ Corporations routinely invoke trade secrets to block access to algorithmic logic, data sources, and error rates (see also Foss-Solbrekk, K. 2023; Mylly, U. 2023).⁹ These practices shield companies from liability and prevent meaningful public oversight. Meanwhile, states benefit from this opacity, using corporate shields to evade human rights obligations and legal scrutiny, while global power asymmetries shape technological adoption. Wealthy states externalize risk onto poorer ones, exporting surveillance systems and requiring compliance with security standards set elsewhere (see Akkerman 2016, see Hayes 2012).¹⁰ This chapter concludes by arguing that the border-industrial complex is a central engine of the deadly border expansion under AI. Without confronting the profit structures driving border militarization, regulatory reforms will remain incomplete. Technological harm cannot be understood in isolation from the political economies that incentivize it.

PROFIT-DRIVEN BORDERING

The border and its practices are not solely as an instrument of the state, even where state authority remains central to its operation. Rather, the border must be approached as a site in which public and private actors are increasingly entangled, producing forms of governance that are distributed across institutions, infrastructures, and markets. The concept of the

⁸ Valdivia, A., Aradau, C., Blanke, T. and Perret, S., 2022. Neither opaque nor transparent: A transdisciplinary methodology to investigate datafication at the EU borders. *Big Data & Society*, 9(2), pp.1–16.

⁹ Foss-Solbrekk, K., 2023. Searchlights across the black box: Trade secrecy versus access to information. *Computer Law & Security Review*, 50, p.105811. <https://doi.org/10.1016/j.clsr.2023.105811>; Mylly, U.-M., 2023. Transparent AI? Navigating between rules on trade secrets and access to information. *IIC International Review of Intellectual Property and Competition Law*, 54(7), pp.1013–1043.

¹⁰ Akkerman, M., 2016. *Expanding the Fortress: The Policies, the Profiteers and the People Shaped by EU's Border Externalisation Programme*. Amsterdam: Transnational Institute and Stop Wapenhandel. Available at: <https://www.tni.org/en/publication/expanding-the-fortress> Hayes, B., 2012. The surveillance-industrial complex. In K. Ball, K.D. Haggerty and D. Lyon (eds.) *Routledge Handbook of Surveillance Studies*. Abingdon: Routledge, pp.167–175.

‘border-industrial complex’ is useful here (Miller 2019),¹¹ not as a fixed or unified entity, but rather as an analytical lens through which to examine the networks of actors, technologies, and financial interests that converge around the management of mobility (Andersson 2014; Jones 2016).¹² The term itself evokes earlier analyses of the military-industrial complex, in which the expansion of security infrastructures is understood not simply as a response to external threats, but as a process driven by the mutual reinforcement of political and economic interests (see also Fotiadis and Ghraïne 2021).¹³ Within this framework, security becomes a field of investment, innovation, and accumulation, in which the identification of risk is closely tied to the development of new technological solutions (Neocleous 2008; Rigakos 2016).¹⁴ At the border, this dynamic is particularly pronounced, as migration is increasingly framed through the language of crisis and instability, creating a demand for systems that promise to enhance control, improve efficiency, and render movement more legible (De Genova 2017).¹⁵

States alone cannot meet their own demand for these technological solutions, as they often do not possess the technical capacity to develop these tools in-house (see also Lindquist and Buttazzoni 2021).¹⁶ As such, the system is increasingly mediated through private actors who design, build, and maintain the infrastructures through which border control is

¹¹ Miller, T., 2019. *Empire of Borders: The Expansion of the US Border Around the World*. London: Verso Books; See also Kawakubo, F., 2020. Privatizing Border Security: Emergence of the “Border-Industrial Complex” and Its Implications. *Public Voices*, 17(1).

¹² Andersson, R., 2014. *Illegality, Inc.: Clandestine Migration and the Business of Bordering Europe*. Oakland: University of California Press; Jones, R., 2016. *Violent Borders: Refugees and the Right to Move*. London: Verso.

¹³ Fotiadis, A. and Ní Bhriain, N., 2021. *Smoking Guns: How European Arms Exports Are Forcing Millions from Their Homes*. Amsterdam: Transnational Institute, 28 July. Available at: <https://www.tni.org/en/publication/smoking-guns>.

¹⁴ Neocleous, M., 2008. *Critique of Security*. Edinburgh: Edinburgh University Press. Rigakos, G.S., 2016. *Security/Capital: A General Theory of Pacification*. Edinburgh: Edinburgh University Press.

¹⁵ De Genova, N., 2017. The borders of ‘Europe’ and the European question. In N. De Genova (ed.) *The Borders of ‘Europe’: Autonomy of Migration, Tactics of Bordering*. Durham, NC: Duke University Press, pp. 1–36.

¹⁶ Lindquist, E. A. and Buttazzoni, M. (2021) ‘The Ecology of Open Innovation Units: Adhocracy and Competing Values in Public Service Systems’, *Policy Design and Practice*, 4(2), pp. 212–227; see also Gammeltoft-Hansen, T. and Sørensen, N.N. (eds.), 2013. *The Migration Industry and the Commercialization of International Migration*. Abingdon: Routledge.

exercised. Through public–private partnerships, large technology firms, defense contractors, and data analytics companies have become central to the operation of contemporary border regimes, providing tools that range from biometric identification systems to predictive analytics platforms and integrated surveillance networks (Broeders 2007; Amoore 2013).¹⁷ These systems are developed within global markets, allowing them to be adapted and deployed across different national contexts, thereby contributing to the standardization of border practices at an international scale (see Loewenstein 2023, Molnar 2024).¹⁸

Of course, the role of the state within such neoliberal arrangements is not diminished but rather it is reconfigured, as it becomes responsible for creating and sustaining the conditions under which markets can operate (Walia 2021).¹⁹ In the context of border security, this configuration involves the active cultivation of a market for security technologies, in which private firms are positioned as indispensable partners in the governance of mobility, vying for government contracts. Procurement processes, public–private partnerships, and innovation initiatives all contribute to the expansion of this market, aligning state priorities with commercial incentives (Leander 2005; Abrahamsen and Williams 2011, Boots et al. 2024).²⁰ What emerges from this arrangement is not a simple transfer of power from the public to the private sphere, but a more complex and messy configuration in which authority is distributed across a network of actors whose interests are not always easily disentangled. Governments set policy frameworks and allocate resources, but private firms normatively shape how those frameworks are operationalized, often influencing the selection of technologies, the definition of problems, and the parameters

¹⁷ Broeders, D., 2007. The new digital borders of Europe: EU databases and the surveillance of irregular migrants. *International sociology*, 22(1), pp.71–92.

¹⁸ Loewenstein, A., 2024. *The Palestine laboratory: How Israel exports the technology of occupation around the world*. Verso Books.

¹⁹ Walia, H., 2021. *Border and Rule: Global Migration, Capitalism, and the Rise of Racist Nationalism*. Chicago: Haymarket Books.

²⁰ Leander, A., 2005. The market for force and public security: The destabilizing consequences of private military companies. *Journal of peace research*, 42(5), pp.605–622; Abrahamsen, R. and Williams, M.C., 2011. Security privatization and global security assemblages. *The Brown Journal of World Affairs*, 18(1), pp.171–180. Boots, S. and Clarke, A., 2024. Breaking all the rules: Information technology procurement in the government of Canada. *Canadian Public Administration*, 67(3), pp.297–325.

of possible solutions (Molnar 2020; Amoore 2013).²¹ The border-industrial complex actively participates in the creation of political demands, contributing to the ways in which migration is conceptualized as a problem requiring technical intervention.

For example, as discussed in previous chapters, contemporary border governance is increasingly organized around the identification and management of potential threats, with automated decision-making playing a central role in translating uncertainty into calculable risk. Yet the production of risk is not merely a technical process. It is shaped by institutional priorities, political narratives, and economic incentives that together define what is to be feared and how that fear is to be addressed (Amoore 2013; de Goede 2012).²² Within the border-industrial complex, risk becomes both a problem to be managed and a resource to be mobilized, driving investment in technologies that promise to mitigate it. The identification of migration as a site of insecurity creates the conditions under which technological solutions can be justified, while the availability of such solutions reinforces the perception that migration can and should be managed through technical (and increasingly militaristic) means. This feedback loop between problem definition and technological response is central to the expansion of border infrastructures, as it allows for the continuous alignment of political concerns with commercial opportunities (Andersson 2014; Neocleous 2008).²³

This alignment is embedded within broader patterns of technological experimentation at the border, where new systems are often deployed with limited oversight or accountability (Molnar 2020; Molnar 2021). Borders have increasingly become testing grounds for emerging technologies, including AI-driven surveillance tools, biometric systems, and automated decision-making platforms, precisely because they are opaque spaces where discretion is high and oversight is limited (Molnar 2021, see also

²¹ Molnar, P., 2021. Technological testing grounds and surveillance sandboxes: Migration and border technology at the frontiers. *Fletcher F. World Aff.*, 45, p.109; Amoore, L., 2013. *The Politics of Possibility: Risk and Security Beyond Probability*. Durham, NC: Duke University Press.

²² Amoore, L., 2013. *The Politics of Possibility: Risk and Security Beyond Probability*. Durham, NC: Duke University Press; De Goede, M., 2012. *Speculative security: The politics of pursuing terrorist monies*. U of Minnesota Press.

²³ Andersson, R., 2014. Time and the migrant other: European border controls and the temporal economics of illegality. *American Anthropologist*, 116(4), pp. 795–809. Neocleous, M., 2008. *Critique of security*. Edinburgh: Edinburgh University Press.

Bovens and Zouridis 2002).²⁴ These deployments are frequently justified through reference to efficiency and innovation, yet they often occur in contexts where the individuals affected have limited capacity to contest their use. The border-industrial complex thus relies on the ability to test, refine, and scale technologies in environments where regulatory constraints may be weaker and where the urgency of migration management can be invoked to justify rapid deployment. The border functions both as a site of control and as a laboratory in which new forms of governance are developed and normalized (Molnar 2020; Zuboff 2019, see also Loewenstein 2023).²⁵

To understand the deeply embedded implications of this dynamic, it is necessary to consider how power operates within these networks. Unlike traditional models of state authority, in which power is centralized and hierarchically organized, the border-industrial complex is characterized by a more distributed and diffuse form of power, in which multiple actors contribute to the shaping of policy, practice, and infrastructure. Expertise circulates between government agencies, private firms, and international organizations responsible for both the management of migration and for the normalization of various types of technologies, creating a shared field of knowledge in which certain approaches to border governance, particularly those that emphasize technological solutions, become dominant (Bigo 2006; Abrahamsen and Williams 2011, see also Sætra 2023).²⁶ Over time, the integration of technology into border governance comes to be seen as both inevitable and desirable (for broader arguments against

²⁴ Molnar, P., 2021. Technological testing grounds and surveillance sandboxes: Migration and border technology at the frontiers. *Fletcher F. World Aff.*, 45, p.109. Bovens, M. and Zouridis, S., 2002. From street-level to system-level bureaucracies: How information and communication technology is transforming administrative discretion and constitutional control. *Public Administration Review*, 62(2), pp. 174–184.

²⁵ Loewenstein, A., 2023. *The Palestine laboratory: How Israel exports the technology of occupation around the world*. London: Verso Books.

Molnar, P., 2020. *Technological testing grounds: Migration management experiments and human rights today*. Brussels: EDRi (European Digital Rights).

Zuboff, S., 2019. *The age of surveillance capitalism: The fight for a human future at the new frontier of power*. London: Profile Books.

²⁶ Bigo, D., 2006. When two become one: Internal and external securitisations in Europe. In: M. Kelstrup and M. Williams, eds. *International relations theory and the politics of European integration*. London: Routledge, pp. 171–204. Sætra, H.S., 2023. Introduction: The promise and pitfalls of techno-solutionism. In: H.S. Sætra, ed. *Technology and sustainable development*. London: Routledge, pp. 1–9.

inevitability see Hao 2025),²⁷ shaping expectations about how migration should be managed and what kinds of solutions are appropriate. Alternative approaches, those that emphasize rights, mobility, or structural inequality, may become marginalized, as the focus shifts toward technical optimization rather than political transformation (Molnar 2020; De Genova 2017; Walia 2021). The border-industrial complex does not simply supply technologies, but it also actively shapes the conditions under which those technologies are understood as necessary, embedding them within a broader framework in which security, efficiency, and innovation are aligned with the expansion of control.

CORPORATE INFRASTRUCTURES AND THE PRODUCTION OF THE DIGITAL BORDER

Contemporary border governance is increasingly structured through a political economy in which state authority and private capital are deeply intertwined (Bigo 2022).²⁸ This entanglement is instantiated through specific actors, technologies, and contractual arrangements, concrete infrastructures of the border-industrial complex integral to how it operates, where corporate actors actively participate in shaping the conditions under which border governance is imagined and enacted. The contemporary border is largely built through contracts.

These contracts, often framed as procurement agreements or public/private partnerships, do more than allocate state resources. Instead, they define and redefine the very architecture of the systems through which mobility is governed. In the multi-billion dollar industry that has grown up around the use of technologies at the border, thousands of private sector actors ranging from small companies to multinational corporations vie for profiting off human suffering. Companies such as Palantir Technologies, Anduril Industries, Elbit Systems, Thales Group, IDEMIA, and Amazon Web Services are only a few examples of companies driving the border industrial complex, creating the infrastructures through which data is collected, analyzed, and operationalized. These firms operate across multiple

²⁷ Hao, K., 2025. *Empire of AI: Dreams and nightmares in Sam Altman's OpenAI*. Penguin Group.

²⁸ Bigo, D., 2022. The digitalisation of border controls and their corporate actors. In: M. Bosworth and L. Zedner, eds. *Privatising Border Control: Law at the Limits of the Sovereign State*. Oxford: Oxford University Press, pp. 229–247.

jurisdictions, developing systems that can be adapted to different national contexts while maintaining a degree of standardization that facilitates their expansion (e.g., see Loewenstein 2023).²⁹

What distinguishes these actors is their growing and influential position within broader circuits of capital and governance. Many are firmly embedded within defense and security industries, drawing on expertise developed in military contexts and then translating it into tools for border management as the demand grows (Chamayou 2015; Leander 2005; Csernatonì 2018).³⁰ Others emerge from the technology sector, bringing with them a platform logic that emphasizes data integration, scalability, and continuous optimization (Srnicek 2017).³¹ In both cases, the result is a convergence of logics in which security and data extraction become mutually reinforcing, aligning the governance of mobility with the imperatives of technological development and market expansion. As scholarship on security governance has long emphasized, private actors are not just implementers of state directives (e.g., see Leander 2005; Abrahamsen and Williams 2011).³² Instead, they are active participants in normatively defining the problems that their technologies are designed to address (Bigo 2006; Abrahamsen and Williams 2011).³³ This participation takes multiple forms, including advisory roles, lobbying efforts (Tarrant and Cowen 2022),³⁴ and the development of pilot programs that allow technologies to be tested and normalized before formal regulatory frameworks are established. Such pilot programs are particularly significant, as they enable the deployment of experimental systems under conditions that may

²⁹ Loewenstein, A., 2023. *The Palestine laboratory: How Israel exports the technology of occupation around the world*. Verso Books.

³⁰ Chamayou, G., 2015. *Drone theory*. London: Penguin UK; Csernatonì, R., 2018. Constructing the EU's high-tech borders: FRONTEX and dual-use drones for border management. *European Security*, 27(2), pp. 175–200; Leander, A., 2005. The market for force and public security: The destabilizing consequences of private military companies. *Journal of Peace Research*, 42(5), pp. 605–622.

³¹ Srnicek, N., 2017. *Platform capitalism*. John Wiley & Sons.

³² Leander, A., 2005. The power to construct international security: On the significance of private military companies. *Millennium: Journal of International Studies*, 33(3), pp. 603–626; Abrahamsen, R. and Williams, M.C., 2011. *Security beyond the state: Private security in international politics*. Cambridge: Cambridge University Press.

³³ Abrahamsen, R. and Williams, M.C., 2011. Security privatization and global security assemblages. *The Brown Journal of World Affairs*, 18(1), pp. 171–180.

³⁴ Tarrant, A. and Cowen, T., 2022. Big tech lobbying in the EU. *The Political Quarterly*, 93(2), pp.218–226.

bypass traditional forms of oversight, justified through the urgency of addressing so-called migration crises (Molnar 2021; see also Kolyer and King 2016).³⁵

For example, in the United States, the deployment of surveillance towers along the southern border provides a clear illustration of this dynamic. Systems developed and operated by US-based Anduril Industries, building on earlier iterations of Integrated Fixed Towers and their military technology applications, have been inextricably woven into border enforcement strategies through contracts worth hundreds of millions of dollars (Solon 2022).³⁶ These systems combine radar, thermal imaging, and AI-driven analytics to detect and classify movement across large swathes of terrain, feeding data into centralized platforms that guide enforcement decisions (Solon 2022, see also Caldwell 2024).³⁷ Similarly, Israeli company Elbit system that has been key to the Israeli apartheid regime, has also made inroads here, placing similar towers in the Sonoran desert (Guerrero 2024),³⁸ including on Indigenous land of the Tohono O’Odham First Nation. Indeed, companies such as Elbit Systems have played a central role in the development of surveillance technologies used to monitor and control movement, first tested within Occupied Palestine and then sold for border enforcement along the Mexico–United States border and the Mediterranean sea route (Molnar 2024, Loewenstein 2023).³⁹ These

³⁵ Molnar, P., 2021. Technological testing grounds and surveillance sandboxes: Migration and border technology at the frontiers. *The Fletcher Forum of World Affairs*, 45(2), pp. 111–134; Collyer, M. and King, R., 2016. Narrating Europe’s migration and refugee ‘crisis’. *Human geography*, 9(2), pp.1–12.

³⁶ Solon, O., 2022. ‘Never sleeps, never even blinks’: the hi-tech Anduril towers monitoring the US border. *The Guardian*, 16 September. Available at: <https://www.theguardian.com/us-news/2022/sep/16/anduril-towers-surveillance-us-mexico-border-migrants> [Accessed 30 May 2026].

³⁷ Caldwell, D.T., 2024. Defense Innovation at an Inflection Point: The Rise of New Primes like Anduril and the Changing Military-Tech Ecosystem. *Open Access Cases*, 1(4), pp. 1–14; Solon, O., 2022. ‘Never sleeps, never even blinks’: the hi-tech Anduril towers monitoring the US border. *The Guardian*, 16 September. Available at: <https://www.theguardian.com/us-news/2022/sep/16/anduril-towers-surveillance-us-mexico-border-migrants> [Accessed 30 May 2026].

³⁸ Guerrero, M. 2024. *Elbit Systems underpins Israeli apartheid and US border wall*. Prism Reports. Available at: <https://prismreports.org/2024/07/22/elbit-systems-israeli-apartheid-us-border/> [Accessed 30 May 2026].

³⁹ Loewenstein, A., 2023. *The Palestine laboratory: How Israel exports the technology of occupation around the world*. London: Verso Books; Molnar, P., 2024. *The walls have eyes: Surviving migration in the age of artificial intelligence*. New York: The New Press.

technologies, which include drones, sensor networks, and integrated command systems, are often marketed internationally as ‘battle-tested,’ highlighting the extent to which contexts of conflict and occupation serve as sites for the development and refinement of tools that are later deployed elsewhere (Loewenstein 2023; Chamayou 2015; Csernatonì 2018).⁴⁰

A similar pattern can be observed in Europe, where biometric systems developed by companies such as IDEMIA and Thales Group underpin asylum and border management processes. Large-scale databases, including Eurodac and the Schengen Information System, rely on private contractors for their development and maintenance, embedding corporate actors within the core infrastructures of migration governance (Broeders 2007; Guild 2013).⁴¹ These systems do not simply passively record identities. Instead, they actively structure how individuals are processed, linking biometric data to administrative decisions in ways that shape access to protection and mobility. This circulation of technologies contributes to a global market in which practices developed in one context are exported to others, often without adequate consideration of their implications (Molnár 2024).⁴²

Once a particular surveillance system is adopted, it shapes how problems are defined and how solutions are imagined. Data becomes central, risk becomes quantifiable, and human movement becomes a problem to be tracked and optimized (see Sætra 2023).⁴³ Alternative approaches, which might emphasize rights, mobility, or structural inequality, are marginalized as the focus shifts toward technical management over the protection of human rights and human dignity (Mezzadra and Neilson 2013; De Genova 2017).⁴⁴ This process can be understood as a form of infrastructural power, in which control is exercised both through direct intervention

⁴⁰ Chamayou, G., 2015. *Drone theory*. Penguin UK. Loewenstein, A., 2023. *The Palestine laboratory: How Israel exports the technology of occupation around the world*. London: Verso Books; Csernatonì, R., 2018. Constructing the EU’s high-tech borders: FRONTEX and dual-use drones for border management. *European Security*, 27(2), pp. 175–200.

⁴¹ Broeders, D., 2007. The new digital borders of Europe: EU databases and the surveillance of irregular migrants. *International Sociology*, 22(1), pp. 71–92. Guild, E., 2013. *Security and Migration in the 21st Century*. Cambridge: John Wiley & Sons.

⁴² Molnár, P., 2024. *The walls have eyes: Surviving migration in the age of artificial intelligence*. New York: The New Press.

⁴³ See Sætra, H.S., 2023. Introduction: The promise and pitfalls of techno-solutionism. In: H.S. Sætra, ed. *Technology and sustainable development*. London: Routledge, pp. 1–9.

⁴⁴ Mezzadra, S. and Neilson, B., 2013. *Border as Method, or, the Multiplication of Labor*. Duke University Press.

and the design of systems that shape how decisions are made. The significance of such systems lies in their capacity to operate below the level of visibility, structuring action in ways that may not be immediately apparent (Bowker and Star 1999; Star 1999; Aizeki et al., Lyon 2013, Star, 1999).⁴⁵ In the context of border governance, corporate technologies become a central part of the apparatus through which policy is enacted and reproduced.

DATA AS THE NEWEST FORM OF RACIAL CAPITALISM

The role of data within this apparatus is particularly significant. As Couldry and Mejias (2019)⁴⁶ argue in their analysis of data colonialism, contemporary forms of data extraction can be understood as extensions of earlier colonial practices, in which resources are appropriated from marginalized populations for the benefit of others (Nyabola 2023; Molnar 2024; Kwet 2023; Qureshi 2020).⁴⁷ Digital colonialism refers to the extraction and appropriation of human life through data, extending earlier forms of colonial domination into the digital sphere. What is extracted is not land or labor in a conventional sense, but information about bodies, behaviors, and movements, captured and transformed into value within global technological systems.

At the border, bodies on the move become sources of data, generating biometric identifiers, movement patterns, and behavioral indicators that are collected, stored, and analyzed within systems that are often controlled by private actors. This data is useful for immediate decision-making but also to refine the systems themselves, improving their predictive capacity and increasing their value. In this sense, migration becomes a site of value

⁴⁵ Aizeki, M., Bingham, L. and Narváez, S., 2023. *The Everywhere Border: Digital Migration Control Infrastructure in the Americas*. Amsterdam: Transnational Institute. Bowker, G.C. and Star, S.L., 1999. *Sorting things out: Classification and its consequences*. Cambridge, MA: MIT Press. Lyon, D., 2013. The border is everywhere: ID cards, surveillance and the other. In: E. Zureik and M.B. Salter, eds. *Global surveillance and policing: Borders, security, identity*. Cullompton: Willan, pp. 66–82; Star, S.L., 1999. The ethnography of infrastructure. *American Behavioral Scientist*, 43(3), pp. 377–391.

⁴⁶ Couldry, N. and Mejias, U.A., 2019. Data colonialism: Rethinking big data's relation to the contemporary subject. *Television & new media*, 20(4), pp.336–349.

⁴⁷ Kwet, M., 2019. Digital colonialism: US empire and the new imperialism in the Global South. *Race & class*, 60(4), pp.3–26; Qureshi, A., 2020. On Digital Decolonization: A Conversation with Morehshin Allahyari. *Frontiers: A Journal of Women Studies*, 41(1), pp.87–100.

generation, both as data as well as for profit. After all, ‘data is the new oil’ (e.g., see Molnar 2024).⁴⁸ The vulnerabilities of people on the move are not incidental to this process. In fact, they are central to it, creating the conditions under which new technologies can be developed and justified (Molnar 2024).⁴⁹ Therefore, the border functions as both a site of control and a site of extraction, where data is harvested and transformed into a commodity that circulates within broader markets.

This dynamic resonates with Cedric Robinson (1983), Jodi Melamed (2015) and Ruth Wilson Gilmore’s (2007) analysis of racial capitalism, in which systems of control and exploitation are understood as mutually constitutive.⁵⁰ At the border, the criminalization of mobility creates the conditions under which surveillance infrastructures can be expanded, while the expansion of these infrastructures reinforces the perception of migration as a problem requiring control that only capitalism can solve. The result is a system in which mobile bodies are positioned simultaneously as threats and as sources of value, their presence justifying the continued growth of the border-industrial complex. The opacity of these arrangements is central to their persistence. Companies frequently invoke trade secrecy to limit access to information about how their systems operate, including the data on which they rely, the algorithms they employ, and the error rates they produce. This opacity is often reinforced by contractual arrangements that restrict disclosure, making it difficult for researchers, advocates, and affected individuals to assess the implications of these technologies. At the same time, states benefit from this opacity, as it allows them to deflect responsibility for harmful outcomes, attributing decisions to technical systems rather than policy choices (Vasanthakumar 2018).⁵¹

What emerges, then, is a form of governance in which power is exercised through infrastructures that are at once highly effective and difficult to scrutinize. Corporate actors participate in the construction of border

⁴⁸ Molnar, P., 2024. *The walls have eyes: Surviving migration in the age of artificial intelligence*. New York: The New Press.

⁴⁹ Molnar, P., 2024. *The walls have eyes: Surviving migration in the age of artificial intelligence*. New York: The New Press.

⁵⁰ Cedric Robinson Black Marxism: The Making of the Black Radical Tradition (1983); Melamed, J., 2015. Racial capitalism. *Critical ethnic studies*, 1(1), pp.76–85; Gilmore, R.W., 2007. *Golden gulag: Prisons, surplus, crisis, and opposition in globalizing California* (Vol. 21). Univ of California Press.

⁵¹ Vasanthakumar, A., 2018. Privatising border control. *Oxford Journal of Legal Studies*, 38(3), pp.411–429.

infrastructures through contracts, platforms, and data systems, situated within a broader global context, one in which the expansion of border technologies is unevenly distributed and closely tied to existing asymmetries of power (Molnar 2021). At the border, this process takes on a particularly concentrated form. People on the move become sites of continuous data generation: biometric identifiers, movement patterns, communication traces, and behavioral indicators are captured through fingerprint scanners, facial recognition systems, mobile phone surveillance, and predictive analytics tools. This data is stored, analyzed, and sold and used both to make immediate decisions, and to refine the systems themselves. The border thus does not just regulate mobility, it extracts value from it, transforming movement into a resource that circulates within broader economic and technological infrastructures (Couldry and Mejjas 2019; Molnar 2020). This extraction is structured by global inequalities. Wealthier states in Europe and North America possess the resources to develop and deploy advanced border technologies, while simultaneously externalizing enforcement to regions positioned as transit zones. The EU–Libya cooperation provides a particularly stark example (Akkerman 2018).⁵² Through financial support, training, and technological assistance, the European Union has extended its border enforcement regime into North Africa, enabling interception and containment beyond its territorial limits (Tazzioli and Walters 2019; Moreno-Lax 2020).⁵³ While framed as a partnership, these arrangements instead operate within deeply unequal power relations, where priorities are set by European actors and consequences are borne by those subject to enforcement.

Technology is central to enabling this externalization of borders, the processes by which states extend migration control beyond their territorial

⁵² Akkerman, M., 2018. Expanding the Fortress: The Policies, the Profiteers and the People Shaped by EU's Border Externalisation Programme. Amsterdam: Transnational Institute. Available at: <https://www.tni.org/en/publication/expanding-the-fortress> [Accessed 30 May 2026]. Michael, M., Hinnant, L. and Britto, R., 2019. Making Misery Pay: Libya Militias Take EU Funds for Migrants. AP News, 31 December. Available at: apnews.com [Accessed 30 May 2026]. Wintour, P., 2018. UN accuses Libyan linked to EU-funded coastguard of people trafficking. The Guardian, 8 June. Available at: <https://www.theguardian.com/world/2018/jun/08/un-accuses-libyan-linked-to-eu-funded-coastguard-of-people-trafficking> [Accessed 30 May 2026].

⁵³ Tazzioli, M. and Walters, W., 2019. Migration, solidarity and the limits of Europe. *Global Discourse*, 9(1), pp.175–190. Moreno-Lax, V., 2024. Meta-borders and the rule of law: from externalisation to 'responsibilisation' in systems of contactless control. *Netherlands International Law Review*, 71(1), pp.21–57.

borders by delegating enforcement, surveillance, and containment to third countries or offshore actors, often to prevent people from reaching their jurisdiction and accessing legal protections (see also Menjívar 2014).⁵⁴ Surveillance systems, data-sharing agreements, and biometric databases allow for the tracking of individuals across jurisdictions, creating distributed systems of governance that exceed territorial boundaries (Hudson 2000).⁵⁵ Similar dynamics are evident in US cooperation with Latin and Central American states and the integration of digital border systems within Canadian migration governance, where technologies developed by private firms are deployed in ways that reflect and reinforce geopolitical hierarchies (Aizeki et al. 2023).⁵⁶

The Palestinian context further illustrates the global circulation of these technologies. Systems developed by companies such as Elbit Systems are marketed internationally as ‘battle-tested’ solutions, drawing on their development in contexts of occupation and conflict (Chamayou 2015; Loewenstein, 2023)⁵⁷ as the ultimate marker of profit. Sites of violence become laboratories for innovation, with technologies refined through use and exported to other border contexts. The concepts of digital colonialism and racial capitalism underscore the continuities between these practices and earlier forms of resource extraction. Just as colonial regimes appropriated land, labor, and materials, contemporary systems extract data from populations positioned at the margins of global power. This data is then transformed into value elsewhere, reinforcing asymmetries between those who are governed by these systems and those who control them (Couldry and Mejias 2019).⁵⁸

At the border, this dynamic is inseparable from the criminalization of mobility. As migration is framed as a security threat, technologies designed to monitor and control movement are positioned as necessary

⁵⁴ Menjívar, C., 2014. Immigration law beyond borders: Externalizing and internalizing border controls in an era of securitization. *Annual review of law and social science*, 10(1), pp.353–369.

⁵⁵ Hudson, A., 2000. Beyond the borders: Globalisation, sovereignty and extra-territoriality. In: D. Newman, ed. *Boundaries, Territory and Postmodernity*. London: Routledge, pp. 95–111.

⁵⁶ Aizeki, M., Bingham, L. and Narváez, S., 2023. *The Everywhere Border: Digital Migration Control Infrastructure in the Americas*. Amsterdam: Transnational Institute.

⁵⁷ Chamayou, G., 2015. *Drone theory*. Penguin UK.

⁵⁸ Couldry, N. and Mejias, U.A., 2019. Data colonialism: Rethinking big data’s relation to the contemporary subject. *Television & New Media*, 20(4), pp. 336–349.

interventions (see broadly Hammerstad 2014).⁵⁹ This creates a self-reinforcing market: the perception of migration as risk drives demand for technological solutions, which in turn justify further investment and expansion. People on the move are positioned simultaneously as threats and as sources of value, their presence sustaining infrastructures that both govern and profit from their mobility. Opacity plays a critical role in maintaining this system. Trade secrecy, proprietary protections, and fragmented legal frameworks limit access to information about how these technologies operate (Molnar 2020; Pasquale 2015).⁶⁰ In transnational contexts, these challenges are compounded by jurisdictional complexity, making accountability even more difficult to achieve (Mejivar 2014).⁶¹ At the same time, states benefit from this opacity, distancing themselves from the technical mechanisms through which decisions are made and deflecting responsibility for their outcomes.

What emerges is a border-industrial complex that is global in scope, structured by uneven distributions of power, and sustained through the entanglement of security, technology, and profit. The expansion of AI-driven border systems is therefore a lucrative political-economic process through which mobility is governed, value is extracted, and inequality is reproduced.

CONCLUSION: PROFIT, POWER, AND THE LIMITS OF REFORM

If contemporary border governance is structured through a dense entanglement of state authority, corporate infrastructure, and global asymmetries of power, what does this configuration mean for regulation, accountability, and reform? Since automation is embedded within a political economy that incentivizes the expansion of surveillance, classification, and control, then the limits of reform cannot be understood as merely technical shortcomings, but rather as structural constraints. Therefore, we must return to the relationship between technological development and

⁵⁹ Hammerstad, A. (2014) 'The securitization of forced migration', in Fiddian-Qasmiyeh, E., Loescher, G., Long, K. and Sigona, N. (eds.) *The Oxford Handbook of Refugee and Forced Migration Studies*. Oxford: Oxford University Press, pp. 265–277.

⁶⁰ Pasquale, F., 2015. *The black box society: The secret algorithms that control money and information*. Cambridge, MA: Harvard University Press.

⁶¹ Menjivar, C., 2014. Immigration law beyond borders: Externalizing and internalizing border controls in an era of securitization. *Annual review of law and social science*, 10(1), pp.353–369.

the framing of certain migration as a problem to be solved through increasingly technical means (Molnar 2024, Leurs 2022).⁶² The framing of migration as a problem of security and risk is not only descriptive, but also productive: it creates the conditions under which particular forms of intervention become both possible and necessary (Bigo 2002).⁶³ Within this framework, digital border technologies do not emerge as neutral responses to migration, but rather as components of a system in which migration itself is constituted as a domain requiring technical management. This process is sustained through the alignment of political and economic interests. States seek to expand their capacity to control mobility, respond to domestic political pressures, and demonstrate effectiveness in managing perceived threats (Arora et al. 2023).⁶⁴ Private firms operate within markets that reward the development of technologies capable of addressing these concerns, generating profit through contracts, data extraction, and system optimization (Viera Magalhães and Couldry 2021).⁶⁵ The result is a self-reinforcing industry in which the expansion of border technologies is both politically justified and economically incentivized.

Within such a system, calls for reform, whether framed in terms of transparency, accountability, or ethical design, encounter inherent limitations. Efforts to improve the fairness or accuracy of AI systems may address specific technical issues, such as bias in training data or disparities in system performance (e.g., see Binns 2018; Kalmykov and Kalmykov 2024).⁶⁶ Yet, they often leave intact the underlying assumptions that govern their deployment, including the reliance on surveillance and prediction as

⁶² Leurs, K., 2022. On data and care in migration contexts. In: M. Sandberg, L. Rossi, V. Galis and M.B. Jørgensen, eds. *Research Methodologies and Ethical Challenges in Digital Migration Studies: Caring for (Big) Data?* Cham: Springer, pp. 171–194.

⁶³ Bigo, D., 2002. Migration and security. In: V. Guiraudon and C. Joppke, eds. *Controlling a New Migration World*. London: Routledge, pp. 121–149.

⁶⁴ Arora, A., Barrett, M., Lee, E., Oborn, E. and Prince, K., 2023. Risk and the future of AI: Algorithmic bias, data colonialism, and marginalization. *Information and Organization*, 33(3).

⁶⁵ Viera Magalhães, J. and Couldry, N., 2021. Giving by taking away: Big tech, data colonialism and the reconfiguration of social good. *International Journal of Communication*, 15, pp. 343–362.

⁶⁶ Binns, R., 2018. Fairness in machine learning: Lessons from political philosophy. In: *Proceedings of the 1st Conference on Fairness, Accountability and Transparency*. PMLR, pp. 149–159.

Kalmykov, V.L. and Kalmykov, L.V., 2024. A white box solution to the black box problem of AI. *arXiv preprint* <https://arxiv.org/abs/2401.03093>, pp. 1–13.

primary modes of managing mobility (see also broadly Eubanks 2018; Gilliom, 2001; Green 2018).⁶⁷ As the following chapter explores in more depth, reform risks functioning as a form of stabilization, mitigating certain harms while preserving the broader logics that produce them. This dynamic is particularly evident in debates on algorithmic accountability. Proposals centered on transparency, such as explainability requirements, audits, or regulatory oversight, are frequently presented as solutions to the opacity of AI systems (Pasquale 2015; Selbst et al. 2019; de Fine Licht, K., and de Fine Licht, J. 2020)⁶⁸—just put a human in the loop—create more internal mechanisms and ethical codes which are unenforceable and appear rather perfunctory when faced with the scale of the structural system in which they are embedded (see also Averill 2024; and Bahner 2008; Enarsson, Enqvist, and Naarttijärvi 2001).⁶⁹ Ultimately, such measures do not fundamentally alter the racial and discriminatory classificatory structures through which decisions are made, nor do they challenge the broader framework in which those classifications justify intervention. Making a system more transparent does not render it less exclusionary, racist, or violent.

Moreover, the effectiveness of reform is constrained by the very structures it seeks to regulate. Corporate actors invoke trade secrecy to limit access to information about their systems, while states rely on these same

⁶⁷ Eubanks, V., 2018. *Automating inequality: How high-tech tools profile, police, and punish the poor*. New York: St. Martin's Press; Gilliom, J., 2001. *Overseers of the poor: Surveillance, resistance, and the limits of privacy*. Chicago: University of Chicago Press; Green, B., 2018. Fair risk assessments: A precarious approach for criminal justice reform. In: *Proceedings of the 5th Workshop on Fairness, Accountability, and Transparency in Machine Learning (FAT/ML)*. Stockholm, pp. 1–5. Available at: harvard.edu [Accessed 30 May 2026].

⁶⁸ Selbst, A.D., Boyd, D., Friedler, S.A., Venkatasubramanian, S. and Vertesi, J., 2019. Fairness and abstraction in sociotechnical systems. In: *Proceedings of the 2019 ACM Conference on Fairness, Accountability, and Transparency*. New York: ACM, pp. 59–68.

de Fine Licht, K. and de Fine Licht, J., 2020. Artificial intelligence, transparency, and public decision-making: Why explanations are key when trying to produce perceived legitimacy. *AI & Society*, 35(4), pp. 917–926.

⁶⁹ Averill, C. (2024) 'Algorithmic reason-giving, arbitrary-and-capricious review, and the need for a clear normative baseline' *University of Cincinnati Law Review*, 93(1), pp. 40–91. Bahner E. et al. (2008) 'Misuse of automated decision aids: Complacency, automation bias and the impact of training experience'. *International Journal of Human-Computer Studies*, 66, pp. 688–699. Enarsson, T., Enqvist, L. and Naarttijärvi, M. (2021) 'Approaching the human in the loop-legal perspectives on hybrid human/algorithmic decision-making in three contexts', *Information & Communications Technology Law*, 31(1), pp. 123–153; Peeters, R. (2020) 'The agency of algorithms: understanding human-algorithm interaction in administrative decision-making'. *Information Polity*, 25(4), pp. 507–522.

actors to diffuse responsibility for controversial decisions. This produces fragmented accountability, in which decision-making is distributed across institutions, infrastructures, and jurisdictions, making it difficult to identify points of meaningful intervention. These limitations are further compounded at the global level. As this chapter has shown, the deployment of border technologies operates within transnational circuits of cooperation, funding, and technological exchange, producing uneven regulatory landscapes. Technologies developed in one jurisdiction may be deployed in another with fewer constraints, while enforcement is increasingly externalized to regions positioned as sites of intervention (see also Ghezelbash 2022, Zaiotti 2016).⁷⁰ The result is a form of regulatory unevenness in which protections are inconsistently applied, often to the detriment of those most affected by border control.

Taken together, these dynamics suggest that the challenges posed by digital border technologies cannot be fully addressed through technical or procedural reform alone. They are rooted in a broader political economy that shapes how technologies are developed, deployed, and justified, deeply embedded in profitable racial capitalism where systems of control and accumulation are mutually constitutive. At the border, surveillance infrastructures cannot be disentangled from the profit structures that sustain them, nor from the racialized logics that render certain populations subject to their effects (Akkerman 2021; Lori and Shildre 2021).⁷¹ To engage meaningfully with these challenges, it is therefore necessary to move beyond a narrow focus on technological design and toward a broader interrogation of the conditions under which these systems emerge. This approach involves questioning the framing of migration as risk, the reliance on technological solutions as default responses, and the alignment of border governance with market-based logics of innovation and efficiency. It also requires attention to how alternative approaches, such as those

⁷⁰ Ghezelbash, D., 2024. Technology and countersurveillance: Holding governments accountable for refugee externalization policies. *Globalizations*, 21(5), pp. 794–808; Zaiotti, R., 2016. Mapping remote control: the externalization of migration management in the 21st century. In: R. Zaiotti, ed. *Externalizing Migration Management: Europe, North America and the Spread of 'Remote Control' Practices*. London: Routledge, pp. 3–30.

⁷¹ Akkerman, M., 2021. Lucrative barriers, deadly consequences. *Mixed Migration Review*, pp. 222–228; Lori, N. and Schilde, K., 2021. A political economy of global security approach to migration and border control. *Journal of Global Security Studies*, 6(1).

grounded in mobility, rights, and structural transformation, are continually marginalized within existing frameworks (De Genova 2012).⁷²

What is at stake is not just the regulation of technology, but rather the very reconfiguration of the political and economic conditions that sustain its use. Reform remains necessary, but insufficient. Without addressing the structural drivers of border expansion, regulatory interventions may mitigate certain harms while actually further concretizing the dynamics that produce them, allowing the border-industrial complex to persist, adapt, and grow (Miller 2024).⁷³ Digital border technologies should therefore should not be understood as an isolated tool within border governance, but as a component of a broader system in which power, capital, and technology are closely aligned. The border-industrial complex operates as a central engine of this system, shaping how mobility is governed while generating value through its control. Critiquing the contemporary border requires attention not only to how technologies function but also to the political-economic structures that render their expansion both possible and profitable.

⁷²De Genova, N., 2012. Border, sovereignty, migrant deportability. In: M. Giuffré, ed. *The Border within: International Law and Policy on the Admission, Exclusion and Expulsion of Aliens*. Rome: CDE, pp. 45–66.

⁷³Miller, T., 2024. *The Many Scandals of the Border Industrial Complex*. Amsterdam: Transnational Institute. Available at: <https://www.tni.org/en/article/the-many-scandals-of-the-border-industrial-complex> [Accessed 30 May 2026].

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Law, Governance, and the Regulatory Gaps that Perpetuate Harm

Abstract This chapter surveys the current legal and governance frameworks that shape the deployment of AI and surveillance technologies at borders. I argue that border technologies thrive in spaces of legal ambiguity: zones where human rights protections are weakened, transparency is absent, and accountability is diffuse. This chapter begins with examining established norms under international refugee law and human rights law, focusing on the principle of *non-refoulement*, as well as the importance of due process, privacy rights, and the right to seek asylum as a scaffolding on which to pin responsibility. However, while these frameworks theoretically constrain state action, they were not designed for the algorithmic governance of life and death at the border. Automated systems used for risk scoring, biometric registration, or deportation decisions often operate outside traditional legal categories. I argue that while the few current legal and policy initiatives that exist to govern technologies at the border may sometimes offer incremental improvements, they fail to address the core issue: AI amplifies coercive border regimes that are already exclusionary and racialized. Without structural change in how states conceive of migration control, technical regulation alone will not ensure justice.

Keywords Non-refoulement • Algorithmic governance • Legal ambiguity • Automated decision-making • regulatory insufficiency



Orange wooden crosses mark the final resting place of people who died crossing the Sonoran desert | P. Molnar | 2022

The office is quiet, insulated from the noise on the streets of the EU-Bubble below. The building in Brussels is all glass and steel, its corridors lined with identical doors, neon lighting, bureaucrats scuttling back and forth. This meeting has been scheduled weeks in advance—and hard to get.

Across the table, a Member of the European Parliament (MEP) listens carefully, nodding at intervals, occasionally making notes. The language is familiar: safeguards, proportionality, risk mitigation, compliance. When the conversation turns to border technologies, the tone remains measured. The MEP acknowledges that systems must be improved, that oversight is necessary, that people's rights must be respected. The emphasis seems to be on refinement of the current reality: better data, clearer rules, stronger accountability mechanisms.

When we raise examples of people denied entry without explanation, asylum seekers misclassified by automated systems, individuals detained on the basis of opaque risk scores, the MEP's response remains steady. These real world harms are framed as implementation challenges, problems that can be addressed through more robust regulation.

The bordering systems themselves are never in question.

A few streets away, in a safehouse tucked between residential buildings, Ayomide sits on a thin mattress, having a cup of red wine in a chipped coffee mug. The space is crowded but quiet. Bags are stacked along the walls. Some people are practicing a dance in front of a large mirror. She checks her phone, scrolling through messages. Maybe another one from her lawyer, another appeal?

The digital systems that govern Ayomide's movement may not be directly visible here in the safehouse, but their effects are constant. She cannot regularize her status. She cannot move freely. She cannot access formal housing or work. The categories that define Ayomide—'irregular,' 'undocumented,' 'risky'—circulate through databases and administrative systems she cannot see. Ayomide's cousin made it to the UK, somehow, in a lorry. But he had to burn off his fingerprints in case biometric scanners were able to scan him.

Back in the MEP's office, our conversation continues. We agree that that transparency is important. That individuals should have access to explanations. That new oversight bodies should be created (but by who?). 'You know how it is these days,' says the MEP. 'Migration is such a hot topic, we must tread very carefully before the upcoming elections.'

In a setting like this, how do you raise the question that the very system of bordering produces structural harms?

The meeting ends on time. The interns on both sides take copious notes. Pretty reports are exchanged and follow-ups are scheduled. A few streets away, Ayomide's is still waiting.¹

Contemporary border regimes are increasingly structured through technological infrastructures and political-economic incentives that reinscribe racial logics and extend the reach of surveillance and control. These developments also intersect with existing legal frameworks that are, at least in principle, designed to constrain state power. This chapter surveys the legal and governance frameworks that shape the deployment of AI and surveillance technologies at borders, contexts that are characterized by rapid technological change, jurisdictional complexity, and uneven distributions of accountability. Border technologies thrive in spaces of legal ambiguity: zones where human rights protections are weakened, meaningful transparency is absent, and accountability is diffuse. This chapter begins with examining established norms under international refugee law

¹This vignette is a composite of various meetings between 2020 and 2023 with Members of the European Parliament during the pre-consultation and drafting phase of the EU's Act to Regulate Artificial Intelligence, as well as invited briefings on border technologies. I had the privilege of meeting Ayomide and her friends in the now-disbanded La Autre Caserne safehouse in Brussels, Belgium in 2020. See also Molnar, 2020.

and human rights law, focusing on the principle of *non-refoulement* (see also Goodwin-Gill 2017),² as well as the importance of due process, privacy rights, and the right to seek asylum as a scaffolding on which to pin responsibility for technologically produced harms. However, while these frameworks theoretically constrain state action, they were not designed with algorithmic governance of mobility in mind.

This chapter then evaluates existing regulatory efforts such as The EU's AI Act,³ including its classification of border technologies as 'high-risk' and its limitations such exemptions for law enforcement, carve-outs for national security, and continued reliance on self-assessment, as well as Canada's proposed (and now defunct) Artificial Intelligence and Data Act (AIDA),⁴ which excluded immigration systems from its draft framework, as well as US approaches, which remain fragmented at best and silent at worst. While some of these initiatives are often touted as presenting improvements to the lack of regulation all together, they fail to address the core issue: automation amplifies coercive border regimes that are already exclusionary and racialized. Without structural changes in how states conceive of migration control, technical regulation alone will not ensure justice, freedom, and human dignity. Any guardrails become perfunctory and performative without broader shifts in political will, and also what is imagined as possible.

LEGAL FRAMEWORKS AND THEIR LIMITS IN THE AGE OF ALGORITHMIC BORDERS

At the level of formal doctrine, international refugee law and human rights law provide a set of foundational principles that are intended to regulate how states treat people on the move. Central among these is the principle

² Goodwin-Gill, G.S., 2017. Non-refoulement and the new asylum seekers. In: M. Crock, ed. *International Refugee Law*. London: Routledge, pp. 187–208.

³ Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act).

⁴ Parliament of Canada, 2022. *Bill C-27: An Act Respecting Artificial Intelligence Systems and Data Used in Artificial Intelligence Systems (Artificial Intelligence and Data Act)*. 1st Session, 44th Parliament. Ottawa; See also Bélanger D, Bergevin-Estable G. Revisiting 'who gets in': borders and migration management in the era of automation and AI in Canada. *AI Soc.* 2026;41(2):1089–1102.

of *non-refoulement*, which prohibits the return of individuals to territories where they face a real risk of persecution, torture, or other serious harm. This principle, enshrined in the 1951 Refugee Convention⁵ and reinforced through broader human rights instruments, has long been understood as a cornerstone of international protection, placing limits on the capacity of states to exclude or expel those seeking asylum (Hathaway and Foster 2014).⁶ Alongside *non-refoulement*, a range of procedural (see Palmiotto, 2024)⁷ and substantive rights are also relevant to border governance, including the right to seek asylum, the right to due process, and protections related to privacy and data. These rights, taken together, form a legal scaffolding that is intended to ensure that decisions about admission, detention, and deportation are made in ways that are fair, transparent, and subject to oversight, providing a framework for algorithmic accountability (McGregor et al 2019).⁸ In theory, they provide a framework through which individuals can challenge state action, holding governments accountable for violations and ensuring that the exercise of power is constrained by legal norms. Yet, the application of these frameworks at the border has always been uneven. Borders have long functioned as spaces in which legal protections are attenuated, whether through doctrines that limit the extraterritorial application of rights, procedural practices that restrict access to remedies, or institutional arrangements that prioritize control over protection (Goodwin-Gill and McAdam 2007; Hathaway 2014).⁹ What distinguish the contemporary moment in addition to the existence of these longstanding gaps are the ways in which they are being reconfigured and, in many cases, expanded through the integration of automation and digital technologies (see also Alkhatib and Bernstei 2019).¹⁰

⁵ Convention Relating to the Status of Refugees (adopted 28 July 1951, entered into force 22 April 1954) 189 UNTS 137.

⁶ Hathaway, J.C. and Foster, M., 2014. *The law of refugee status*. Cambridge University Press.

⁷ Palmiotto, F., 2024. Procedural fairness in automated asylum procedures: Fundamental rights for fundamental challenges. *Computer Law & Security Review*, 55.

⁸ McGregor, L., Murray, D. and Ng, V., 2019. International human rights law as a framework for algorithmic accountability. *International & Comparative Law Quarterly*, 68(2), pp.309–343.

⁹ Goodwin-Gill, G.S. and McAdam, J., 2007. *The refugee in international law*. 3rd ed. Oxford: Oxford University Press; Hathaway, J.C., 2014. *The law of refugee status*. 2nd ed. Cambridge: Cambridge University Press.

¹⁰ Alkhatib, A. and Bernstein, M. (2019) ‘Street-level algorithms: A theory at the gaps between policy and decisions’. In Proceedings of the 2019 CHI conference on human factors in computing systems, pp. 1–13.

International legal regimes also struggle to account for the structural and racialized dimensions of migration control, focusing instead on discrete violations rather than systemic patterns of exclusion (Achiume 2021).¹¹ This limitation becomes particularly pronounced in the context of techno-racial bordering, where decisions are not always traceable to identifiable acts, but are instead produced through complex automated systems that operate across multiple sites and actors. For example, the use of automated risk-scoring tools in asylum processes raises questions about how principles such as due process and the right to be heard can be meaningfully applied (Ozkul 2023).¹² If an individual is classified as ‘high risk’ based on a model that draws on multiple variables, including nationality, ethnicity and race, travel history, and behavioral indicators, how can they challenge that classification if the logic of the model is not disclosed? Similarly, if biometric systems generate errors that result in misidentification (Stenum 2017),¹³ wrongful association, or even deportation (Radziwinowiczówna 2022),¹⁴ what mechanisms exist for correcting those errors, and how accessible are they to those affected?

These questions point to a broader tension between legal frameworks that are oriented toward identifiable decisions and technological systems that diffuse decision-making across processes that are often opaque. The deployment of digital technologies at borders frequently occurs in ways that circumvent traditional accountability mechanisms, whether through pilot programs, emergency measures, or partnerships with private firms that are not subject to the same transparency requirements as state actors (Molnar and Gill 2018; Molnar 2021).¹⁵ In such contexts, while the law may not fully disappear, its capacity to regulate is significantly weakened, as the sites at which decisions are made become more difficult to locate and contest. This difficulty is compounded by the ways in which

¹¹ Achiume, E.T., 2021. Digital Racial Borders. *AJIL Unbound*, 115, pp. 333–338.

¹² Ozkul, D., 2023. *Automating Immigration and Asylum: The Uses of New Technologies in Migration and Asylum Governance in Europe*. Oxford.

¹³ Stenum, H., 2017. The body-border: Governing irregular migration through biometric technology. *spheres: Journal for Digital Cultures*, (4), pp. 1–13.

¹⁴ Radziwinowiczówna, A., 2022. Bare life in an immigration jail: technologies of surveillance in US pre-deportation detention. *Journal of Ethnic and Migration Studies*, 48(8), pp.1873–1890.

¹⁵ Molnar, P. and Gill, L., 2018. *Bots at the gate: A human rights analysis of automated decision-making in Canada’s immigration and refugee system*. Toronto: Citizen Lab and International Human Rights Program; Molnar, P., 2021. Technological testing grounds and surveillance sandboxes: Migration and border technology at the frontiers. *The Fletcher Forum of World Affairs*, 45(2), pp. 111–134.

algorithmic systems challenge established legal categories (see broadly Reed 2018).¹⁶ Legal frameworks are typically organized around distinctions between public and private actors, between domestic and extraterritorial jurisdiction, and between different types of decision-making processes. AI-driven systems, however, often operate across these boundaries, integrating data from multiple sources and producing outputs that inform decisions in ways that are not easily captured within existing doctrines (e.g., see Trauttmansdorff and Loschi, 2025 for a discussion on interoperability in the EU).¹⁷ A risk score generated by a private company may influence a decision made by a public authority, data collected in one jurisdiction may be used to justify action in another, and an automated classification may shape outcomes without ever being formally recognized as a ‘decision’ in legal terms.

What emerges from this analysis is both a gap between law and practice, as well as a direct misalignment between the structures of legal regulation and the forms of governance that are now being deployed. The result is a set of conditions in which technologies can operate within spaces of ambiguity, where responsibilities are unclear, oversight is limited, and the capacity for redress is constrained. Importantly, these governance gaps are not accidental. They are produced, reproduced, and concretized, reflecting choices about how and where technologies are deployed, about which actors are involved, and about how responsibility is distributed. Therefore, understanding the harms associated with automation at the border requires more than an examination of individual systems or isolated legal violations. It requires attention to the ways in which governance is structured to operate within and through these gaps, allowing technologies to be deployed in ways that may be formally compliant with certain aspects of the law while undermining its broader objectives.

PRODUCING AMBIGUITY: DISCRETION, OPACITY, AND THE DIFFUSION OF RESPONSIBILITY

Since contemporary legal frameworks are ill-equipped to regulate the forms of algorithmic governance emerging at the border, it becomes necessary to examine more closely how this misalignment is operationalized

¹⁶ Reed, C., 2018. How should we regulate artificial intelligence? *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 376(2128).

¹⁷ Trauttmansdorff, P. and Loschi, C., 2025. Interoperability and the multiple modes of ordering in Europe’s digital border regime. *International Migration*, 63(3).

in practice. The governance of border technologies is not characterized by a simple absence of regulation, but by the presence of overlapping, incomplete, and often contradictory frameworks that together produce spaces of ambiguity within which technologies can be deployed with limited scrutiny (Molnar 2021; Moreno-Lax 2019).¹⁸ These spaces are not incidental to the operation of contemporary border regimes. Rather, they are central to it, enabling the integration of new systems while minimizing the constraints that might otherwise limit their use.

One of the most pervasive features of this ambiguity is opacity. As discussed in earlier chapters, algorithmic systems often operate in ways that are difficult to interrogate, whether due to their technical complexity, the proprietary nature of their design, or the institutional arrangements through which they are deployed (Paquale 2015; Gillespie 2014).¹⁹ At the border, this opacity takes on particular significance, as decisions that affect fundamental rights such as the ability to seek asylum, to enter a territory, or to avoid detention, may be influenced by systems whose underlying logic is not disclosed (see also Fubara-Manuel 2019).²⁰ This lack of transparency is frequently justified on technical or commercial grounds, with governments and private firms invoking the need to protect intellectual property or maintain system integrity (Pasquale 2015; Burrell 2016).²¹

Yet the effect of this opacity extends beyond the protection of proprietary interests. It reshapes the conditions under which responsibility can be exercised and how power operates (Barabas et al 2020; Gammeltoft-Hansen, 2013).²² If individuals are unable to access information about

¹⁸ Molnar, P., 2021. Surveillance sovereignty: Migration management technologies and the politics of privatization. In: G. Hudson and I. Atak, eds. *Migration, Security, and Resistance: Global and Local Perspectives*. London: Routledge, pp. 66–82; Moreno-Lax, V., 2019. Border-induced displacement: The ethical and legal implications of distance-creation through externalization. *Questions of International Law*, 56, pp. 5–33.

¹⁹ Gillespie, T., 2014. The relevance of algorithms. In: T. Gillespie, P.J. Boczkowski and K.A. Foot, eds. *Media technologies: Essays on communication, materiality, and society*. Cambridge, MA: MIT Press, pp. 167–194.

²⁰ Fubara-Manuel, I., 2019. *Animating opacity: race, borders, and biometric surveillance* (Doctoral dissertation, University of Sussex).

²¹ Burrell, J., 2016. How the machine ‘thinks’: Understanding opacity in machine learning algorithms. *Big Data & Society*, 3(1), p. 2053951715622512. Pasquale, F., 2015. *The black box society: The secret algorithms that control money and information*. Cambridge, MA: Harvard University Press.

²² Barabas, C., Doyle, C., Rubinovitz, J.B. and Dinakar, K., 2020. Studying up: reorienting the study of algorithmic fairness around issues of power. In: Proceedings of the 2020

how decisions are made, they are also limited in their capacity to challenge those decisions, whether through administrative appeals or judicial review. People on the move, especially those seeking asylum, are often confronted with automated systems that produce outcomes, such as risk classifications or identity matches, without providing meaningful explanations or avenues for contestation (Molnar 2020; Molnar 2021; Otchengco, 2025; see also *Mehara v Canada*, 2024).²³ In such contexts, opacity both obscures the operation of technology and well as functioning as a mechanism of control, insulating systems from scrutiny while amplifying their effects in a system already replete with discretionary decision-making and limited mechanisms of redress.

Closely related to this opacity is the question of extraterritoriality, which has long played a central role in shaping how legal protections apply at the border. As explored earlier, states have developed a range of strategies for extending their control beyond their formal territorial boundaries, whether through agreements with third countries, offshore processing arrangements, or the deployment of technologies that enable remote surveillance and intervention (see also Gammeltoft-Hansen 2016; Moreno-Lax 2024).²⁴ These practices allow states to influence migration pathways at earlier stages, often before individuals reach the point at which the state's legal obligations are most clearly defined. The integration of digital technologies into these arrangements significantly expands their scope, pushing bordering practices and conversely legal obligations further and further away. This creates a form of distributed governance in which the boundary between domestic and extraterritorial action becomes increasingly blurred.

Conference on Fairness, Accountability, and Transparency. New York: ACM, pp. 167–176. Gammeltoft-Hansen, T., 2013. The rise of the private border guard: Accountability and responsibility in the migration control industry. In: T. Gammeltoft-Hansen and N. Nyberg Sørensen, eds. *The migration industry and the commercialization of international migration*. Abingdon: Routledge, pp. 128–151.

²³ Otchengco, A.P., 2025. *Examining the Role of Chinook in Immigration Decision-Making: Mebrara v. Canada*. Canadian Immigration Lawyers Association (CILA). Available at: <https://cila.co/examining-the-role-of-chinook-in-immigration-decision-making-mehrra-v-canada/> [Accessed 30 May 2026]; *Mebrara v Canada (Citizenship and Immigration)*, [2024] FC 1554.

²⁴ Gammeltoft-Hansen, T., 2016. Private security and the migration control industry. In: R. Abrahamsen and A. Leander, eds. *Routledge Handbook of Private Security Studies*. London: Routledge, pp. 207–215; Moreno-Lax, V., 2024. Meta-borders and the rule of law: from externalisation to ‘responsibilisation’ in systems of contactless control. *Netherlands International Law Review*, 71(1), pp. 21–57.

Such practices of extraterritoriality also raise fundamental questions about the reach of legal obligations, particularly in relation to non-refoulement and the right to seek asylum (Achiume 2021),²⁵ as seen in the cases of pushback and pullback operations in the Aegean and Mediterranean corridors, increasingly powered by surveillance capabilities of entities such as Frontex and the Hellenic coastguard (ECRE 2020; Koros, 2021.; Topak, 2014).²⁶ Also, when states (and supranational actors like Frontex) act through intermediaries such as paramilitaries (Marquardt, et al., 2026)²⁷ or technological systems that operate beyond their territory, it becomes more difficult to establish responsibility for the consequences of those actions. These legal technicalities also have substantive implications for the ability of individuals to access protection, as it allows states to influence outcomes while avoiding the formal triggers that would activate their obligations.

A further dimension of this ambiguity arises from the dual-use nature of many border technologies (see also Ams, 2023).²⁸ Systems developed for military or security purposes are increasingly adapted for use in civilian contexts, including migration management, often without the development of new regulatory frameworks to govern their deployment (Chamayou 2015; Leander 2005, Loewenstein 2023, Molnar 2024).²⁹

²⁵ Achiume, E. Tendayi. "Racial and Xenophobic Discrimination and the Use of Digital Technologies in Border and Immigration Enforcement." UN Doc. A/HRC/48/76, September 22, 2021.

²⁶ ECRE, 2020. Frontex: Commission Calls for Urgent Meeting over Complicity in Pushbacks, Critique of 100 Million Euro Investment in Drone Surveillance. European Council on Refugees and Exiles. Available at: <https://ecre.org/frontex-commission-calls-for-urgent-meeting-over-complicity-in-pushbacks-critique-of-100-million-euro-investment-in-drone-surveillance/> [Accessed 30 May 2026]. Koros, D., 2021. The normalization of pushbacks in Greece: Biopolitics and racist state crime. *State Crime Journal*, 10(2), pp. 238–256. Topak, Ö.E., 2014. The biopolitical border in practice: surveillance and death at the Greece-Turkey borderzones. *Environment and Planning D: Society and Space*, 32(5), pp. 815–833.

²⁷ Marquardt, E. et al., 2026. *The use of Afghan paramilitaries by the Greek authorities for pushbacks*. Question for written answer E-001563/2026 to the Commission. European Parliament. Available at: https://www.europarl.europa.eu/docco/document/E-10-2026-001563_EN.html [Accessed 30 May 2026].

²⁸ Ams, S. (2023) 'Blurred lines: the convergence of military and civilian uses of AI & data use and its impact on liberal democracy', *International Politics*, 60(4), pp. 879–896.

²⁹ Chamayou, G., 2015. *Drone theory*. Penguin UK. Leander, A., 2005. The market for force and public security: The destabilizing consequences of private military companies. *Journal of peace research*, 42(5), pp.605–622.

Drones, for example, may be used for both military surveillance and border monitoring, while biometric systems developed for security screening may be integrated into asylum processes (Csernatoní 2018; Amoore 2016).³⁰ The migration of these technologies across domains complicates existing regulatory structures, as systems that were not designed with civilian oversight in mind are repurposed in contexts where the stakes for individual rights are significant. This movement across domains also contributes to a normalization of exceptional measures. Technologies that are justified in contexts of conflict or emergency are incorporated into everyday governance, often without a corresponding shift in how they are regulated. The result is a form of ‘everyday securitization,’ in which practices that might once have been considered extraordinary become routine, embedded within administrative processes that are difficult to distinguish from more conventional forms of governance (Bigo 2002; Huysmans 2006).³¹ Already, technologies once used at the border like facial recognition are making this way into sport stadiums, while drones that patrol migration corridors start circling above environmental protesters (Tadić 2026).³²

The role of private actors further complicates this landscape, particularly in relation to questions of responsibility and liability. As discussed in Chap. 4, corporate actors play a central role in the development and deployment of border technologies, yet they often operate under legal frameworks that limit their exposure to scrutiny. Trade secrecy, in particular, functions as a powerful mechanism for shielding companies from accountability, allowing them to restrict access to information about their systems, including the data they use, the algorithms they employ, and the ways in which their technologies perform in practice (Moore, 2017; Maggiolino, M., 2019; Molnar 2024).³³ These practices creates barriers to

³⁰ Csernatoní, R., 2018. Constructing the EU’s high-tech borders: FRONTEX and dual-use drones for border management. *European Security*, 27(2), pp. 175–200; Amoore, L., 2016. Securing with algorithms: Knowledge, decision, sovereignty. *Security Dialogue*, 48(1), pp. 3–10.

³¹ Bigo, D., 2002. Security and immigration: Toward a critique of the governmentality of unease. *Alternatives*, 27(1_suppl), pp.63–92. Huysmans, J., 2006. *The politics of insecurity: Fear, migration and asylum in the EU*. Routledge.

³² Tadić, A., 2026. Facial Recognition Technology, Surveillance, and the Transformations of the Crowd in the Sports Stadium: A Literary Approach. *The International Journal of the History of Sport*, pp. 1–18.

³³ Maggiolino, M., 2019. EU trade secrets law and algorithmic transparency. Available at SSRN 3363178. Moore, T.R., 2017. Trade secrets and algorithms as barriers to social justice. *Center for Democracy & Technology*.

oversight that can be difficult to overcome, particularly in contexts where resources for independent monitoring are already limited, for example at the border. At the same time, the reliance of states on private actors allows for a diffusion of responsibility, in which harmful outcomes can be attributed to technical systems or corporate decisions rather than to policy choices (Maidanou 2019).³⁴ This diffusion does not eliminate accountability, but it complicates its exercise, making it more difficult to identify who is responsible for particular outcomes and how they might be challenged.

Finally, these dynamics converge in the problem of redress. For individuals subject to border technologies, the ability to challenge decisions is often already limited, whether due to a lack of information, restricted access to legal assistance, lack of psychosocial support, or the procedural barriers associated with administrative and judicial processes. For example, in the Greek asylum system, the integration of biometric technologies into registration and processing procedures illustrates how the promise of efficiency can coexist with the erosion of procedural fairness (e.g., see Ozkul 2023).³⁵ Upon arrival, people seeking asylum are enrolled into systems that collect fingerprints, facial images, and other identifying data, which are then cross-referenced against European databases such as Eurodac (Human Rights Watch and Homo Digitalis 2022).³⁶ These systems are presented as mechanisms for ensuring consistency and preventing duplication, yet they also introduce points of failure that can have significant consequences (Maidanou et al 2020).³⁷ Errors in data capture, mismatches across databases, or inconsistencies in records can lead to delays, misclassification, or even the rejection of claims, often without clear explanation or accessible mechanisms for correction (Guild et al. 2013; Molnar

³⁴ Madianou, M., 2019. The biometric assemblage: Surveillance, experimentation, profit, and the measuring of refugee bodies. *Television & New Media*, 20(6), pp.581–599.

³⁵ Ozkul, D., 2023. *Automating Immigration and Asylum: The Uses of New Technologies in Migration and Asylum Governance in Europe*. Oxford: Refugee Studies Centre, University of Oxford.

³⁶ Human Rights Watch and Homo Digitalis, 2022. *Greece: New Biometrics Policing Program Undermines Rights*. ReliefWeb, 18 January. Available at: <https://reliefweb.int/report/greece/greece-new-biometrics-policing-program-undermines-rights-engr> [Accessed 30 May 2026].

³⁷ Madianou, M., Dencik, L., Aradau, C., Taylor, L., Metcalfe, P. and Perret, S., 2020. The Biometric Lives of Migrants: Borders, Discrimination and (In) justice. *AoIR Selected Papers of Internet Research*.

2020).³⁸ People navigating these systems often encounter processes that are opaque and difficult to challenge, with limited access to legal assistance or information about how decisions are made (Tsitselikis 2019, Molnar 2020; Molnar 2021).³⁹ The reliance on automated or semi-automated systems can further complicate this situation, as decisions may be influenced by classifications or risk assessments that are not disclosed. In such contexts, the formal availability of legal rights, such as the right to appeal, does not necessarily translate into meaningful access to justice, as the practical barriers to contestation remain substantial.

A related dynamic can be observed along the Mexico–United States border, where the deployment of AI-enabled surveillance systems contributes to a form of monitoring that extends beyond traditional checkpoints. Technologies such as automated license plate readers, aerial drones, and integrated data platforms allow authorities to track movement across large areas, linking observations to databases that include prior encounters, travel histories, and other forms of information (Aizeki et al.).⁴⁰ While these systems are often justified through reference to security and efficiency, their operation raises significant questions about privacy, proportionality, and the scope of state power (Bingham et al, 2023).⁴¹ In particular, the collection and retention of data about individuals who have not been charged with any offense challenges established understandings of how surveillance should be regulated (see Andringa and Palma 2025).⁴² Individuals may be identified, tracked, and recorded based on their proximity to the border or their association with particular routes, even where no unlawful activity has been established. The use of predictive systems further extends this reach, as data is used not only to document movement

³⁸ Guild, E., Costello, C., Garlick, M. and Moreno-Lax, V., 2013. *Current Challenges for International Refugee Law with a Focus on EU Policies*. Brussels: European Parliament Directorate-General for External Policies; Molnar, P., 2020. *Technological testing grounds: Migration management experiments and human rights today*. Brussels: EDRI.

³⁹ Tsitselikis, K., 2019. Refugees in Greece: Facing a multifaceted labyrinth. *International Migration*, 57(2), pp.158–175.

⁴⁰ Aizeki, M., Bingham, L. and Narváez, S., 2023. *The Everywhere Border: Digital Migration Control Infrastructure in the Americas*. Amsterdam; Aizeki, M., Boyce, G., Miller, T., Nevins, J. and Ticktin, M., 2021. *Smart Borders or a Humane World?* Amsterdam: Transnational Institute.

⁴¹ Bingham, L., Aizeki, M., Narvaez, S. and Perosa, T., 2023. Digital migration control infrastructure as Worldmaking. *U. St. Thomas JL & Pub. Pol'y*, 17, p.800.

⁴² Andringa, P. and Palma, S., 2025. *Trump's immigration data dragnet*. Financial Times, 10 December. Available at: <https://ig.ft.com/us-ice-surveillance/> [Accessed 30 May 2026].

but also to anticipate it, guiding enforcement decisions in ways that are difficult to scrutinize (Molnar 2024).⁴³ As a result, individuals may be subject to heightened surveillance or intervention based on probabilistic assessments that are not readily accessible or contestable.

Automated systems exacerbate these challenges by introducing additional layers of complexity, as individuals may need to contest both the outcome of a decision as well as the underlying logic of the system that produced it. In many cases, such contestation is effectively impossible. However, when possible, litigation and advocacy remain important tools for challenging the deployment of harmful technologies and creating space for alternative approaches. Strategic legal challenges can expose the limitations of existing systems, drawing attention to issues of transparency, accountability, and rights, while also setting precedents that constrain future deployments. Such interventions are essential for addressing the immediate harms associated with algorithmic decision-making, even as they operate within broader systems that require transformation (McGregor and Molnar 2023).⁴⁴

However, existing mechanisms for accountability are poorly equipped to address the harms associated with algorithmic decision-making, particularly in contexts where those affected have limited access to resources or legal representation (Hanley and Shragge 2009).⁴⁵ The result is a system in which errors, biases, and misclassifications may persist without meaningful correction, reinforcing patterns of exclusion and inequality (Mayson, 2019).⁴⁶ Opacity, extraterritoriality, dual-use technologies, private sector shielding, and limited avenues for redress do not operate in isolation. They create a set of intersecting conditions in which border technologies can be deployed with significant discretion and limited accountability. These conditions reflect the ways in which legal and institutional frameworks are configured to accommodate the expansion of technological systems for

⁴³ Molnar, P., 2024. *The Walls Have Eyes: Surviving Migration in the Age of Artificial Intelligence*. New York: The New Press.

⁴⁴ McGregor, Lorna, and Petra Molnar. *Digital Border Governance: A Human Rights-Based Approach*. University of Essex and Office of the High Commissioner for Human Rights (OHCHR), 2023.

⁴⁵ Hanley, J. and Shragge, E., 2009. Organizing for immigrant rights: policy barriers and community campaigns. *Journal of Community Practice*, 17(1–2), pp. 184–206.

⁴⁶ Mayson, S.G. (2019) ‘Bias in, bias out’, *Yale Law Journal*, 128(8), pp. 2218–2300.

political and profit-based needs, at the expense of people's lives (see also Hall 2017).⁴⁷

REGULATION IN MOTION

Contemporary border technologies operate within governance gaps that are structurally produced rather than incidental. Therefore, it becomes necessary to examine the regulatory responses that have emerged in recent years, and to assess whether they are actually capable of addressing the harms of digital border technologies. While there has been a marked increase in attention to the governance of AI in particular at both national and supranational levels (Cath 2018; Taeihagh, 2021; Sharma et al., 2020),⁴⁸ the treatment of border technologies (or lack thereof) within these frameworks reveals a persistent tension between the aspiration to regulate and the political realities that shape how such regulation is designed and implemented.

One striking example of AI regulation is the European Union's Artificial Intelligence Act. After years of negotiation, the AI Act reached political agreement in late 2023 and entered into force in the summer 2024 with phased implementation timelines extending through the latter half of the decade. This omnibus piece of law-making represents the most comprehensive attempt to date to establish a risk-based regional regulatory framework for AI systems. Within this framework, a range of border-related technologies, including biometric identification systems, risk assessment tools, and migration management applications, are classified as 'high-risk,' thereby subjecting them to requirements related to data governance, documentation, human oversight, and conformity assessments (Kusche 2024).⁴⁹ On its face, this classification appears to acknowledge the

⁴⁷ Hall, A., 2017. Decisions at the data border: Discretion, discernment and security. *Security Dialogue*, 48(6), pp.488–504.

⁴⁸ Cath, C., 2018. Governing artificial intelligence: ethical, legal and technical opportunities and challenges. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 376(2133). Taeihagh, A., 2021. Governance of artificial intelligence. *Policy and society*, 40(2), pp.137–157. Sharma, G.D., Yadav, A. and Chopra, R., 2020. Artificial intelligence and effective governance: A review, critique and research agenda. *Sustainable Futures*, 2, p.100004. Goos, M. and Savona, M., 2024. The governance of artificial intelligence: Harnessing opportunities and mitigating challenges. *Research Policy*, 53(3), p.104928.

⁴⁹ Kusche, I., 2024. Possible harms of artificial intelligence and the EU AI act: fundamental rights and risk. *Journal of Risk Research*, pp.1–14.

significant implications of such systems for fundamental rights, situating border technologies within a regulatory category that demands heightened scrutiny. Yet, as a growing body of scholarship has noted, the effectiveness of this framework is constrained by the very exemptions and design choices that enable its adoption (Veale and Borgesius 2021; Edwards 2022).⁵⁰ For example, law enforcement and national security applications, which encompass many border technologies, are subject to carve-outs that limit the scope of certain obligations mandated under the AI Act, while the reliance on self-assessment and internal compliance mechanisms raises questions about the robustness of enforcement and mechanisms of redress. Unfortunately, in practice, this means that systems deployed at the border may be subject to less stringent oversight than their formal classification as ‘high-risk’ would suggest, particularly in contexts where states invoke security justifications to limit transparency (Rodelli and Chander 2025).⁵¹

Further, these limitations are also not merely technical. They reflect political compromises, with initial promising directions explored by various policy makers perhaps unsurprisingly abandoned in the final text of the Act. This regulatory watering down is perhaps less surprising when looked at in the broader context of migration governance, which is often shaped by a tension between formal commitments to rights and the perceived imperatives of control and political gains, with the latter frequently prevailing in moments of contestation (Achiume 2021, Molnar 2023; Markozani 2024).⁵² Therefore, the EU AI Act, while ambitious in scope, operates within this tension, seeking to regulate technologies without fundamentally challenging the frameworks within which they are deployed. It is firmly a product of its time, one that highlights how the EU is moving away from human rights protections for people-on-the-move, toward

⁵⁰ Edwards, L., 2022. *The EU AI Act: a summary of its significance and scope*. London: Ada Lovelace Institute; Veale, M. and Borgesius, F.Z., 2021. Demystifying the draft EU artificial intelligence act. *arXiv preprint* <https://arxiv.org/abs/2107.03721>, pp. 1–18.

⁵¹ Rodelli, C. and Chander, S., 2025. *One Year On, EU AI Act Collides with New Political Reality*. TechPolicy.Press, 7 August. Available at: <https://www.techpolicy.press/one-year-on-eu-ai-act-collides-with-new-political-reality/> [Accessed 30 May 2026].

⁵² markozani, E., 2024. *Differentiation and Politicization: The Case of EU Migration Policy*. Lanham, MD: Lexington Books.

Molnar, P., 2023. *EU's AI Act Falls Short on Protecting Rights at Borders*. Just Security, 20 December. Available at: <https://www.justsecurity.org/90763/eus-ai-act-falls-short-on-protecting-rights-at-borders/> [Accessed 30 May 2026].

increased offshoring, deportations, carceral regimes. The AI Act on paper offers incremental improvements in oversight while in practice reinscribing the broader logics of securitization and exclusion that structure border governance (Protect Not Surveil Coalition 2026).⁵³

A similar pattern can be observed in the Canadian context, where efforts to regulate AI have been marked by both ambition and limitation. The now-defunct *Artificial Intelligence and Data Act (AIDA)* provides a telling example of the limitations of regulatory approaches in this area. AIDA was first introduced as part of Bill C-27, positioned as a framework for governing high-impact AI systems, yet it explicitly excluded certain domains, including aspects of immigration and border enforcement, from its scope, effectively leaving a significant domain of state activity outside its regulatory reach (e.g., see International Civil Liberties Monitoring Group 2023).⁵⁴ This omission is quite telling, even though automated tools have already been used in Canada since at least 2018 to triage visa applications, identify potential fraud, and support decision-making processes, often with the aim of improving efficiency and consistency in a system plagued by long delays (Molnar and Gill 2018; Molnar 2020).⁵⁵ This exclusion reflects a broader pattern in which border technologies are treated as exceptional, once again positioned outside the frameworks, however limited, that govern other forms of algorithmic decision-making. The result is a regulatory gap that allows such systems to operate with limited oversight, even in contexts where broader commitments to transparency and accountability are formally in place.

The subsequent stagnation and eventual collapse of Bill C-27 in early 2025, following sustained criticism from civil society and experts, further illustrates the challenges associated with developing comprehensive regulatory frameworks in this area. Criticism included that AIDA was drafted with limited consultation, left key definitions and obligations vague or to future regulation, and was widely seen as overly deferential to industry interests, for example through its reliance on flexible, post-hoc rulemaking

⁵³ Protect Not Surveil, 2026. *Protect Not Surveil*. Available at: <https://protectnotsurveil.eu/> [Accessed 30 May 2026].

⁵⁴ International Civil Liberties Monitoring Group. (2023). *Brief on Bill C-27: An Act to enact the Consumer Privacy Protection Act, the Personal Information and Data Protection Tribunal Act and the Artificial Intelligence and Data Act*. iclmg.ca.

⁵⁵ Molnar, P. and Gill, L., 2018. *Bots at the gate: A human rights analysis of automated decision-making in Canada's immigration and refugee system*. Toronto: Citizen Lab and International Human Rights Program.

rather than clear statutory safeguards (Brown 2023, Scasasa 2023).⁵⁶ Parliamentary review stalled throughout 2024 amid these concerns, and momentum further weakened in a context of political delay and contestation. Ultimately, the prorogation of Parliament in January 2025 and the Prime Minister's resignation caused the bill to die on the order paper before it could be finalized. What has followed has been a fragmented and incoherent approach, with elements of AI governance continuing to develop through piecemeal mechanisms such as provincial initiatives, sector-specific rules, and new institutional bodies such as Canada's newly launched AI Safety Institute. Federal officials have indicated that AIDA, in its original form, will not return, and may instead be reworked or replaced entirely (Attard-Frost 2025).⁵⁷ The result in Canada is a regulatory landscape that remains partial, uneven, and unsettled, underscoring the difficulty of translating broad commitments to responsible AI into enforceable legal regimes, particularly in contexts where powerful political and economic interests shape both the scope and ambition of reform.

In the United States, the regulatory landscape remains even more fragmented. Rather than a comprehensive federal framework, governance is distributed across a patchwork of executive orders, agency guidelines, and sector-specific initiatives, many of which emphasize principles such as fairness, accountability, and transparency without establishing meaningful, enforceable standards. The 2023 Executive Order on Artificial Intelligence introduced by the Biden Administration (2023)⁵⁸ signaled increased attention to AI risks, particularly in areas such as safety, civil rights, and national security. However, it was notably silent on the use of AI in border enforcement and immigration, despite the rapid expansion of such systems in these domains (Molnar 2025).⁵⁹ Subsequent political shifts further

⁵⁶ Brown, D., 2023. Canada's Proposed Artificial Intelligence and Data Act (AIDA): A Critical Review. Available at SSRN 4687995; Scassa, T., 2023. Regulating AI in Canada: A critical look at the proposed Artificial Intelligence and Data Act. *Can. B. Rev.*, 101, p.1.

⁵⁷ Attard-Frost, B., 2025. *The Death of Canada's Artificial Intelligence and Data Act: What Happened and What's Next for AI Regulation in Canada*. Montreal AI Ethics Institute, 17 January. Available at: <https://montrealethics.ai/the-death-of-canadas-artificial-intelligence-and-data-act-what-happened-and-whats-next-for-ai-regulation-in-canada/> [Accessed 30 May 2026].

⁵⁸ Executive Office of the President, 2023. *Executive Order 14110: Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence*. Federal Register, 88 FR 75191. Washington, D.C.: National Archives and Records Administration.

⁵⁹ Molnar, P., 2025. Border Technologies Under Trump 2.0. Just Security, 3 February. Available at: <https://www.justsecurity.org/105662/border-technologies-under-second-trump-administration/> [Accessed 30 May 2026].

destabilized this already-limited framework such as for example the roll-back of the Order under the Trump Administration underscores the fragility of executive-led governance, particularly in contexts where regulatory constraints are perceived to conflict with security priorities or economic interests. Across administrations, regulatory approaches have remained largely aspirational, relying on voluntary compliance, internal audits, and agency discretion, with limited mechanisms for meaningful oversight or redress.

Within such a fragmented landscape, agencies such as US Customs and Border Protection (CBP) continue to expand the use of surveillance systems, biometric identification tools, and data analytics platforms, often under legal authorities that predate the emergence of these technologies (Amoore 2013; Eubanks 2018).⁶⁰ This expansion has been accompanied by deepening partnerships with private technology firms, including contracts with Palantir Technologies for data integration and predictive analytics (Gutman 2021, Iliadis and Akker 2022),⁶¹ and Anduril Industries for autonomous surveillance systems such as AI-enabled border towers (Caldwell 2024; Biddle, 2025).⁶² These collaborations illustrate how regulatory gaps are not merely accidental, but are embedded within a broader political economy in which technological development, security policy, and corporate interests are closely aligned (Andersson 2022).⁶³ The result is a form of regulatory lag in which technological capacity outpaces legal constraint, allowing systems to be deployed and normalized before meaningful scrutiny can occur. In practice, this produces a governance environment in which the most consequential decisions, such as who is identified, tracked, detained, or excluded, are shaped by infrastructures that remain

⁶⁰ Amoore, L., 2013. *The politics of possibility: Risk and security beyond probability*. Durham: Duke University Press; Eubanks, V., 2018. *Automating inequality: How high-tech tools profile, police, and punish the poor*. New York: St. Martin's Press.

⁶¹ Gutman, B., 2021. *Palantir's surveillance empire: A story of american policing, patriotism, and profit* Iliadis, A. and Akker, A., 2022. The seer and the seen: Surveying Palantir's surveillance platform. *The Information Society*, 38(5), pp.334–363.

⁶² Caldwell, D.T., 2024. Defense Innovation at an Inflection Point: The Rise of New Primes like Anduril and the Changing Military-Tech Ecosystem. *Open Access Cases*, 1(4). Biddle, S. (2025) 'Trump's Big Beautiful Gift to Anduril', Intercept. Available at: <https://theintercept.com/2025/07/09/trump-big-beautiful-bill-anduril/>.

⁶³ Andersson, R. (2022) 'Border walls, irregular migration, and the co-optation of the border security playbook', *International Migration*, 60(4), pp. 226–230.

only partially visible and weakly regulated, reinforcing a broader pattern in which border technologies expand in the absence of robust legal limits.

Further, given how much deeply documented harms of digital border technologies already exists globally, what unites these different regulatory contexts is not a lack of awareness of the issues at stake, but rather a deep reluctance to engage with the structural conditions that drive the expansion of border technologies (Achiume 2021; Molnar 2024).⁶⁴ Regulatory frameworks tend to focus on the design and operation of individual systems, addressing issues such as bias, accuracy, and transparency, while leaving largely unexamined the broader question of why such systems are deployed and how they reshape the governance of mobility (see also Krafft et al 2022).⁶⁵ In this sense, regulation often operates at the level of mitigation rather than transformation, seeking to reduce harm (if that) without fundamentally altering the dynamics that produce it. This limitation is particularly evident when considering the relationship between regulation and the political economy of the border-industrial complex discussed in the previous chapter. As long as the development and deployment of border technologies are incentivized by the alignment of state and corporate interests, efforts to regulate those technologies will encounter pressures that limit their scope and effectiveness (see also broadly Dijstelbloem 2021).⁶⁶ Requirements for transparency will be constrained by claims of trade secrecy, oversight mechanisms will be under-resourced or lack independence; and enforcement will be shaped by the same institutional priorities that drive technological adoption.

The proposals advanced in recent scholarship offer important points of intervention, yet they also highlight the scale of the challenge. Calls for ongoing algorithmic impact assessments (Raji, I.D. et al. 2020)⁶⁷ (e.g., human rights impact assessments or HRIAs, and data protection impact

⁶⁴ Achiume, E.T., 2021. Digital Racial Borders. *AJIL Unbound*, 115, pp. 333–338; Molnar, P., 2024. *The walls have eyes: Surviving migration in the age of artificial intelligence*. New York: The New Press.

⁶⁵ Krafft, T. D., Zweig, K.A. and König, P.D. (2022) ‘How to regulate algorithmic decision-making: A framework of regulatory requirements for different applications’. *Regulation & Governance*, 16(1), pp. 119–136.

⁶⁶ Dijstelbloem, H., 2021. *Borders as infrastructure: The technopolitics of border control*. MIT Press.

⁶⁷ Raji, I.D., Smart, A., White, R.N., Mitchell, M., Gebru, T., Hutchinson, B., Smith-Loud, J., Theron, D. and Barnes, P., 2020. Closing the AI accountability gap: Defining an end-to-end framework for internal algorithmic auditing. In: *Proceedings of the 2020 Conference on Fairness, Accountability, and Transparency*. New York: ACM, pp. 33–44.

assessments or DPIAs) emphasize the need to evaluate the potential effects of systems before they are deployed, during, and after implementation along the entire life cycle of a project, particularly in contexts where they may affect fundamental rights (e.g., see Palmiotto, F., 2024).⁶⁸ Requirements for transparency and explainability seek to make the operation of systems more accessible, enabling individuals as well as context specific oversight bodies to understand how decisions are made (Nnawuchi and George 2025).⁶⁹ Independent monitoring bodies have been proposed as mechanisms for ensuring accountability, while rights to explanation and redress aim to strengthen the capacity of individuals to challenge harmful outcomes (McGregor and Molnar 2023).⁷⁰

In addition to these measures, some scholars and advocates, including the former UN Special Rapporteur on Contemporary Forms of Racism (2021),⁷¹ have called for more far-reaching interventions, including moratoria or outright prohibitions on the use of certain high-risk technologies, particularly those that involve biometric identification or predictive policing in border contexts (Amnesty 2023, Ozkul, 2023; McGregor and Molnar 2023).⁷² Such proposals reflect a growing recognition that some harms simply cannot not be adequately addressed through procedural

⁶⁸ Palmiotto, F., 2024. Procedural fairness in automated asylum procedures: Fundamental rights for fundamental challenges. *Computer Law & Security Review*, 55, p. 106065.

⁶⁹ Nnawuchi, U. and George, C., 2025. Decoding accountability: the importance of explainability in liability frameworks for smart border systems. *Discover Computing*, 28(1), p.64 and Nnawuchi, U. and George, C., 2024, November. Orwellian odyssey: Smart borders and the imperative for explainability. In *The International Conference on Artificial Intelligence and Smart Environment* (pp. 293–301). Cham: Springer Nature Switzerland.

⁷⁰ McGregor, L. and Molnar, P., 2023. *Digital Border Governance: A human rights-based approach*. Colchester and Geneva: University of Essex and Office of the High Commissioner for Human Rights (OHCHR).

⁷¹ Achiume, E.T., 2021. *Racial and Xenophobic Discrimination and the Use of Digital Technologies in Border and Immigration Enforcement*. UN Doc. A/HRC/48/76. Geneva: UN Human Rights Council. Available at: <https://www.ohchr.org/en/documents/thematic-reports/ahrc4876-racial-and-xenophobic-discrimination-and-use-digital>.

⁷² Amnesty International, 2023. *Automated Apartheid: How Facial Recognition Fragments, Segregates and Controls Palestinians in the OPT*. London: Amnesty International. Available at: <https://www.amnesty.org/en/documents/mde15/6701/2023/en/>; Ozkul, D., 2023. *Automating Immigration and Asylum: The Uses of New Technologies in Migration and Asylum Governance in Europe*. Oxford: Algorithmic Fairness for Asylum Seekers and Refugees (AFAR) Project, University of Oxford/Hertie School. Available at: https://www.hertie-school.org/fileadmin/2_Research/1_About_our_research/2_Research_centres/Centre_for_Fundamental_Rights/AFAR/Automating-immigration-and-asylum_Ozkul.pdf.

safeguards alone, particularly where the technologies in question are embedded within systems that are themselves structured by racial exclusion and inequality (Benjamin 2019; Achiume 2021).⁷³ Yet these more ambitious proposals encounter limits. Without broader shifts in political will, they risk remaining aspirational. The governance of border technologies is deeply entangled with questions of sovereignty, security, and economic interest, making it difficult to disentangle technical regulation from the political contexts in which it is embedded, particularly in an increasingly destabilized world that runs on fear and suspicion (Walia 2021).⁷⁴ As a result, any efforts to reform the use of technologies at the border must contend not only with the characteristics of specific systems, but with the very logics and structures that sustain them.

CONCLUSION: RETHINKING THE LEGAL IMAGINATION OF BORDER TECHNOLOGIES

The challenge of governing technologies at the border cannot be reduced to a question of better rules or improved oversight. It is fundamentally a question of how mobility itself is understood and governed (Bello 2024).⁷⁵ As long as migration is framed primarily as a problem of risk requiring technological management, the demand for systems that identify, predict, and control movement will persist, along with the conditions that give rise to the harms traced throughout this book and in broader scholarship. These harms are not just the result of technological failure or regulatory gaps. They are directly produced through governance structures that enable, and often incentivize, the deployment of such systems (e.g., see Ibrahim and Howarth 2017).⁷⁶ Legal frameworks intended to constrain

⁷³ Achiume, E.T., 2021. *Racial and Xenophobic Discrimination and the Use of Digital Technologies in Border and Immigration Enforcement*. UN Doc. A/HRC/48/76. Geneva: UN Human Rights Council. Available at: <https://www.ohchr.org/en/documents/thematic-reports/ahrc4876-racial-and-xenophobic-discrimination-and-use-digital>.

⁷⁴ Walia, H., 2021. *Border and rule: Global migration, capitalism, and the rise of racist nationalism*. Haymarket books.

⁷⁵ Bello, V., 2024. Introduction — the spiralling of the securitisation of migration in the EU: From the management of a ‘crisis’ to a governance of human mobility? In V. Bello and S. Léonard (eds.) *The Spiralling of the Securitisation of Migration in the European Union*. Abingdon: Routledge, pp.1–18.

⁷⁶ Ibrahim, Y. and Howarth, A., 2017. Communicating the ‘migrant’ other as risk: Space, EU and expanding borders. *Journal of Risk Research*, 21(12), pp.1465–1486. <https://doi.org/10.1080/13669877.2017.1313762>.

state power operate within contexts marked by opacity, fragmentation, and power asymmetries, limiting their capacity to meaningfully address algorithmic decision-making in practice.

The governance gaps, such as opacity, extraterritoriality, dual-use technologies, corporate shielding, and limited avenues for redress, are interconnected features of a broader system in which the regulation of mobility is aligned with the expansion of surveillance and control. Together, they create conditions under which technologies operate with limited accountability, even where formal commitments to rights remain in place. At the same time, regulatory efforts such as the EU AI Act, alongside provincial/state and federal initiatives in Canada and the United States, reflect a growing recognition of the need to govern AI within border contexts. These frameworks represent important, if partial, attempts to establish standards and oversight. Yet their limitations underscore a deeper challenge: the difficulty of regulating technologies that are embedded within political, economic, and institutional arrangements that extend beyond the reach of any single legal instrument (Dijstelbloem, H., 2021).⁷⁷

The regulation of AI in particular is difficult because states often lack strong incentives to impose meaningful constraints on its development and deployment. In an increasingly competitive geopolitical environment, AI is framed as a strategic asset, central to economic growth, military capability, and national security, fueling what is frequently described as a global ‘AI arms race’ (Cave and Ó hÉigeartaigh, 2018; Kania, 2017).⁷⁸ Within this context, robust regulation can be perceived as a potential disadvantage, risking slower innovation or reduced competitiveness relative to rival states. Governments prioritize rapid deployment and technological leadership over robust regulation (Crootoof, 2015; Scharre, 2018),⁷⁹ further reinforced by the normative overreach of the private sector in the

⁷⁷ Dijstelbloem, H., 2021. *Borders as infrastructure: The technopolitics of border control*. MIT Press.

⁷⁸ Cave, S. and Ó hÉigeartaigh, S.S., 2018, December. An AI race for strategic advantage: rhetoric and risks. In Proceedings of the 2018 AAAI/ACM Conference on AI, Ethics, and Society (pp. 36–40). Kania, E.B., 2017. *Battlefield Singularity: Artificial Intelligence, Military Revolution, and China's Future Military Power*. Washington, DC: Center for a New American Security (CNAS). Available at: <https://s3.amazonaws.com/files.cnas.org/documents/Battlefield-Singularity-November-2017.pdf>.

⁷⁹ Crootoof, R., 2015. The killer robots are here: Legal and policy implications. *Cardozo Law Review*, 36(5), pp.1837–1915; Scharre, P., 2018. *Army of None: Autonomous Weapons and the Future of War*. New York: W.W. Norton & Company.

governance of algorithms and AI-type technologies (Srivastava, 2023).⁸⁰ This geopolitical competition actively undermines efforts to establish binding, rights-based frameworks for AI governance.

Addressing these challenges requires a rethinking of the legal imagination of the border itself, shifting the focus from how (or whether) technologies can be governed within existing regimes to how those regimes are structured, what purposes they serve, and how they can be undone. This shift involves directly engaging with and attempting to undo the racialized, political, and economic dynamics that shape border governance (Achiume 2021),⁸¹ and recognizing that technological harm cannot be understood in isolation from these broader conditions. In this sense, the governance of technologies at the border is a technical and legal problem, and also a political one. These logics concern how states distribute mobility, responsibility, and protection, and how these distributions shape the conditions under which life is sustained, constrained, or rendered precarious (see also Meier 2020).⁸² Without a shift in these underlying logics, regulatory interventions are likely to remain partial, perfunctorily addressing symptoms while leaving intact the structures that produce harm.

⁸⁰ Srivastava, S. (2023) 'Algorithmic governance and the international politics of Big Tech', *Perspectives on politics*, 21(3), pp. 989–1000.

⁸¹ Achiume, E.T., 2021. Racial borders. *Geo. LJ*, 110, p.445.

⁸² Meier, I., 2020. Affective border violence: Mapping everyday asylum precarities across different spaces and temporalities. *Emotion, Space and Society*, 37, p.100702.

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Futures Beyond Border Necrotechnics

Abstract This concluding chapter explores alternative models of mobility governance that move away from punitive, carceral, and militarized approaches. It argues that AI's harms are not inevitable but rather reflect political choices about how societies understand migration, security, and human movement. This chapter also offers a vision for rights-respecting and empowering technology in migration contexts: tools built collaboratively with mobile communities, grounded in values of dignity, autonomy, and justice, not efficiency or deterrence. Examples include asylum-support apps co-designed with displaced communities, community-controlled databases, and privacy-centered communication platforms. I conclude by arguing that futures beyond the carceral border require rethinking the very foundations of migration governance. As long as mobility is framed as a threat, AI will be mobilized to contain, sort, and exclude. But if mobility is understood as a human right and a global reality, technology could instead serve as a tool for empowerment, not punishment.

Keywords Mobility justice • Rights-respecting technology • Community-controlled data • Participatory design • Transformative governance • Carceral abolition



A blue water barrel placed by search and rescue groups in the Sonoran desert | P. Molnar | 2022

In November 2025, fifty people from all over the world gathered in a lopsided circle in Nairobi, Kenya, pushing chairs around to make them barely fit. Outside, matatus (minibuses) weaved through traffic as jacaranda trees spilled their purple flowers over the busy sidewalks.

This is not your traditional conference. There is no single discipline represented in the room. Lawyers sit beside technologists, researchers beside organizers, people who have survived occupation and those who have crossed borders sit beside those who have spent years studying them.

What brings this group together is a shared recognition: that the systems governing migration and technology are expanding faster than the frameworks available to understand or contest them.

On the walls of the room, papers are taped up, littered with colorful sticky notes. 'Tech and Asylum' reads one. 'Smash the Border' reads another. 'Dumb People' is also on one sticky note, an answer to the question of what do we need to get rid of to build a different world. Sentences are written, crossed out, rewritten. Words are debated carefully. What does it mean to speak of harm

without reproducing it? What does it mean to imagine alternatives without defaulting to the language of reform?

This is the process that produces the Migration and Technology Monitor Manifesto. It is an artifact of a community coming together for the first time in person since operating for three years in the virtual world. The Migration and Technology Monitor started as an archive and a platform in 2020, yet quickly grew into a community. Since 2023, it has incubated three cohorts of sixteen fellows, all with lived experience of migration and occupation, working on issues related to technology. From chatbots created by and for Venezuelan refugees to online psychosocial archives for the Sudanese community displaced in Uganda to tracking the surveillance of migrant workers in the Middle East, these sixteen colleagues-on-the-move and their allies were able to gather for the first time in Nairobi, one of the only place where travel was possible for a group with complex (or non-existing) passports and very experienced with punishing visa regime.

Wanting to walk away with an artifact from the Gathering, the community decided to create a Manifesto: a list of demands for the broader world on the use of technology at borders. ‘We believe that migration is inherent to humankind and other species—all life moves,’ states one demand. ‘Technology should serve humanity, protect us from exploitation especially for the vulnerable individuals, help us work less, have a dignified life, and free our time to find joy,’ states another.

The document is also a site of negotiation between experiences, geographies, geographies, and ways of knowing and living that do not always align. It does not emerge from a single institution, nor does it claim authority through expertise alone. Instead, the MTM Manifesto is shaped through collective reflection, grounded in lived experience. The Manifesto also refuses the assumption that technological futures are inevitable, or that governance must follow the logics of control that currently dominate migration regimes. Ultimately, like the community invisioned, their Manifesto unsettles the boundaries of what is considered possible, insisting that we must at least try to imagine forms of mobility, governance, and technology that are not organized around exclusion, surveillance, and harm.

By the end of the day, the room in Nairobi is covered in paper and sticky notes, some folded into paper cranes by a participant. The Manifesto is still incomplete. It will continue to change, live, and breathe in its own online platform, where others can also comment, share, and change it. But something has profoundly shifted. Maybe not in the actual visa regimes outside or the surveillance that continues to harm communities, but rather in the horizons of what can be articulated and demanded. Judith Cabrera, former co-director of the Border Line Crisis Centre in Mexico and a fellow with the Migration and

Technology Monitor, puts it: ‘it gives me back hope that I think I was losing. I think I got my heart back.’¹

In the preceding chapters, we have traced how digital technologies have become embedded within infrastructures of border governance that are at once racialized, securitized, and economically incentivized. The question that now remains is how the very *logics* on which they operate can be meaningfully reconfigured (Walters 2006, Walia 2021; Bradley and Noronha 2022).² Because the harms associated with technologies at the border are not incidental to their development and deployment, nor reducible to technical failures that can be corrected through better design or more robust oversight. Rather, individual and collective harms emerge from the precise alignment of technological systems with broader political logics that frame migration as a problem and a risk, requiring continuous monitoring, classification, and control (Molnar 2024).³

This concluding chapter explores alternative models of mobility governance that move away from punitive, carceral, and militarized approaches. As this book has argued, technology’s harms always reflect political choices about how societies understand migration, security, and human movement, and the concepts of the border and bordering itself. And because these harms are not inevitable, this means that there are other futures to work toward (see Hao 2025).⁴ This chapter begins by outlining the limits of reformist approaches because even with robust oversight, transparency, and accountability mechanisms, technologies embedded in racialized and punitive systems will reproduce harm. Thus, we must

¹ The Migration and Technology Monitor is one of the projects that we incubate at the Refugee Law Lab and this vignette is a snapshot of our first-ever Global Gathering, held in Nairobi in November, 2024. See for example 2026 Migration and Technology Monitor and Refugee Law Lab: “Migration and Technology Monitor: Building a Different World – From the Ground Up!” <https://static1.squarespace.com/static/626d808cc8cf094dc06d60e4/t/6985a6b3b95b552fd5785648/1770366693109/FINAL+MTM+REPORT-Feb+2026.pdf>.

² Walters, W., 2006. Rethinking borders beyond the state. *Comparative European Politics*, 4(2–3), pp.141–159. Walia, H., 2021. *Border and rule: Global migration, capitalism, and the rise of racist nationalism*. Haymarket books. Bradley, G.M. and De Noronha, L., 2022. *Against borders: The case for abolition*. Verso Books.

³ Molnar, P., 2024. *The Walls Have Eyes: Surviving Migration in the Age of Artificial Intelligence*. New York: The New Press.

⁴ Hao, K., 2025. *Empire of AI: Dreams and Nightmares in Sam Altman’s OpenAI*. New York: Penguin Press.

envision more transformative futures: ones centered on freedom of movement, community care, and community-led innovation. Drawing on abolitionist thought (e.g., Gilmore 2007, Kaba; 2021, Walia 2021, Riva et al., 2024, Tazzioli and De Genova 2023)⁵ and decolonial migration scholarship (e.g., Achiume 2019, Tuck & Yang, Razack 2020; Mayblin and Turner 2020),⁶ this chapter outlines frameworks for dismantling the border's racial and carceral logics. These include: redirecting investment from surveillance to community infrastructure, expanding humanitarian pathways and regularization mechanisms, treating migration as a social fact rather than a security threat, building community-led data governance models and questioning the inevitability and ossification of current bordering practices as a whole.

This chapter also offer a vision for rights-respecting and empowering technology in migration contexts: tools built collaboratively with mobile communities, grounded in values of dignity, autonomy, and justice, not efficiency or deterrence. This chapter concludes by arguing that futures beyond the racial and carceral border require rethinking the very foundations of migration governance. As long as mobility is framed as a threat, technological tools will be mobilized to contain, sort, and exclude. But if mobility is understood as a human right and a global reality, technology could instead serve as a tool for empowerment, not punishment.

⁵ Riva, S., Campbell, S., Whitener, B. and Medien, K. (eds.), 2024. *Border Abolition Now*. London: Pluto Press. Tazzioli, M. and De Genova, N., 2023. Border abolitionism: analytics/politics. *Social Text*, 41(3), pp.1–34; Mayblin, L. and Turner, J., 2020. *Migration Studies and Colonialism*. Cambridge: Polity Press; Gilmore, R.W., 2007. *Golden Gulag: Prisons, Surplus, Crisis, and Opposition in Globalizing California*. Oakland: University of California Press; Kaba, M., 2021. *We Do This 'Til We Free Us: Abolitionist Organizing and Transforming Justice*. Chicago: Haymarket Books; Walia, H., 2021. *Border and Rule: Global Migration, Capitalism, and the Rise of Racist Nationalism*. Chicago: Haymarket Books.

⁶ Achiume, E.T., 2019. Migration as decolonization. *Stan. L. Rev.*, 71, p.1509.; Tuck, E. and Yang, K.W., 2012. Decolonization is not a metaphor. *Decolonization: Indigeneity, education & society*, 1(1), pp.1–40.; Razack, S.H., 2020. Settler colonialism, policing and racial terror: The police shooting of Loreal Tsingine. *Feminist Legal Studies*, 28(1), pp.1–20. Mayblin, L. and Turner, J., 2020. *Migration Studies and Colonialism*. Cambridge: Polity Press.

THE LIMITS OF REFORM AND THE NECESSITY OF REIMAGINING MOBILITY

As we have seen in the previous chapter, while at first glance seemingly promising, reformist approaches to the regulation of migration management technologies encounter structural limits to their ability to actually make meaningful change happen to the lives of affected communities. For example, as discussed in Chap. 5, efforts to improve transparency, accountability, and fairness often operate within the same frameworks that give rise to harm, seeking to mitigate their effects without directly challenging the underlying assumptions that sustain them. In the European example, under the EU's Act to Regulate Artificial Intelligence, the classification of border technologies as 'high-risk,' for example, may seemingly impose additional safeguards, yet it leaves intact the premise that migration should be governed through systems that identify and manage risk in the first place (not to mention normalize derogations from these safeguards on the grounds of national security, among others, see Molnar 2023).⁷ Similarly, requirements for human oversight or algorithmic explainability through mandated human rights impact assessments (HRIAs) or data protection impact assessments (DPIAs) may enhance some procedural protections at least on paper, but they do not actually alter the material conditions under which decisions are made and the logics which underpin them (Imbrosio Filho, C., 2025).⁸

This tension reflects a broader insight within critical scholarship on governance and technology: that systems designed to manage inequality are often limited in their capacity to transform it, if not actually worsen it. For example, reforms that leave intact the structures of racial capitalism may reduce harm in the short term while actually reinforcing the long-term stability of those structures (Melamed, 2015).⁹ Within the context of border governance and border technologies in particular, efforts to regulate AI without addressing the carceral, racial, and exclusionary logics that

⁷ Molnar, P., 2023. The EU's AI Act falls short on protecting rights at borders. *Just Security*, 20 December. Available at: <https://www.justsecurity.org/90763/eus-ai-act-falls-short-on-protecting-rights-at-borders/>.

⁸ Imbrosio Filho, C., 2025. Artificial Intelligence in European Border Policing: Legal Challenges, Migration Governance, and Security Sector Reform. *Rocznik Integracji Europejskiej*, (19), pp.133–156.

⁹ Melamed, J., 2015. Racial capitalism. *Critical ethnic studies*, 1(1), University of Minnesota Press pp.76–85.

underpin migration control globally ultimately reproduce the very dynamics they seek to mitigate (see also Molnar 2024, Achiume 2022).

The concept of border necrotechnics developed across the previous chapters, may once again provide a useful frame for understanding this limitation. If contemporary border regimes operate through the differential distribution of life chances, using social and political power to dictate how some may live and how others must die and exposing some populations to heightened risk while securing the mobility of others, then technologies that are embedded within these regimes will reproduce this distribution, even where their operation is subject to procedural safeguards. Further, the appearance of procedural safeguards may actually function to obscure the structural violence embedded at the center of these systems, acting as a less obvious but just as deadly bordering regimes.

To move beyond these obstructions requires a shift in perspective.

Rather than asking how border technologies can be governed within existing border regimes, it becomes necessary to ask how those regimes themselves might be reimagined, transformed, undone. This ‘Imagining Otherwise’¹⁰ (Olufemi 2021) involves engaging with alternative frameworks that challenge the assumptions that have come to define contemporary migration governance, including the treatment of mobility as a threat, the prioritization of control over care, and the alignment of security with technological intervention. Abolitionist thought offers one such framework. Drawing on the work of scholars and organizers such as Ruth Wilson Gilmore (2007), Andrea Richie (2023), Harsha Walia (2021), and Mariame Kaba (2021),¹¹ abolitionism is not to be understood as the simple removal of institutions, but rather as a project of societal transformation that seeks to address the conditions that make those institutions appear necessary, immutable, and inevitable. Within this growth and care-full oriented perspective (see Spade 2020),¹² the expansion of border enforcement becomes a political choice shaped by particular understandings of security, belonging, and value.

¹⁰ Olufemi, L., 2021. *Experiments in Imagining Otherwise*. London: Hajar Press.

¹¹ Kaba, M., 2021. *We Do This ‘Til We Free Us: Abolitionist Organizing and Transforming Justice*. Chicago: Haymarket Books. Ritchie, A.J., 2023. *Practicing New Worlds: Abolition and Emergent Strategies*. Oakland: AK Press; Gilmore, R.W., 2007. *Golden Gulag: Prisons, Surplus, Crisis, and Opposition in Globalizing California*. Oakland: University of California Press.

¹² Spade, D., 2020. *Mutual Aid: Building Solidarity During This Crisis (and the Next)*. London: Verso Books.

Rather than treating migration as a problem to be solved through surveillance and control (see Molnar 2024),¹³ abolitionist perspectives emphasize the need to address the structural conditions that produce displacement and precarity in the first place, including global inequality, conflict, apartheid, labor exploitation, and environmental degradation (see also Hickok and Maslej, 2023; see also Miceli et al 2022).¹⁴ They also foreground the importance of building systems of care and support that enable individuals and communities to move safely and with dignity, challenging the assumption that restriction is the primary means of managing mobility. Abolitionist perspectives are also in conversation with decolonial approaches to migration studies, which highlight the ways that contemporary border regimes are rooted in histories of empire and racial hierarchy (e.g., see Saito 2020).¹⁵ Scholars such as Tendayi Achiume, Eve Tuck and K. Wayne Yang, and Sherene Razack¹⁶ have emphasized that the restriction of movement across borders cannot be understood apart from the global inequalities that have been produced through colonial processes. From this perspective, calls for more humane or efficient border control risk obscuring the deeper question of how and why mobility is unevenly distributed in the first place and why exclusion continues to be predicated along racial lines.

Taken together, these frameworks suggest that the harms-associated technologies at the border are embedded in a system of vast power differentials that seems inevitable, immutable, and intractable. As Walia remind: ‘Empires crumble, capitalism is not inevitable, gender is not

¹³Molnar, P., 2024. *The Walls Have Eyes: Surviving Migration in the Age of Artificial Intelligence*. New York: The New Press.

¹⁴Hickok, M. and Maslej, N., 2023. A policy primer and roadmap on AI worker surveillance and productivity scoring tools. *AI and Ethics*, 3, pp.673–687; Miceli, M., Posada, J. and Yang, T., 2022. Studying up machine learning data: Why talk about bias when we mean power? *Proceedings of the ACM on Human-Computer Interaction*, 6(GROUP), Article 34, pp.1–14.

¹⁵Natsu Taylor Saito, *Settler Colonialism, Race, And The Law: Why Structural Racism Persists* 201–14 (2020).

¹⁶Achiume, E.T., 2019. Migration as decolonization. *Stan. L. Rev.*, 71, p.1509.; Tuck, E. and Yang, K.W., 2012. Decolonization is not a metaphor. *Decolonization: Indigeneity, education & society*, 1(1), pp.1–40.; Razack, S.H., 2020. Settler colonialism, policing and racial terror: The police shooting of Loreal Tsingine. *Feminist Legal Studies*, 28(1), pp.1–20. Mayblin, L. and Turner, J., 2020. *Migration Studies and Colonialism*. Cambridge: Polity Press.

biology, whiteness is not immutable, prisons are not inescapable, and borders are not natural law' (2021).¹⁷ Rather, technologies used for migration management reflect political choices about how societies understand migration, security, and human movement, choices that can, in principle, be made differently. The challenge, then, is both to critique existing systems as well as to imagine alternatives that move beyond the carceral logics that currently structure border governance.

ABOLITION, DECOLONIZATION, AND THE UNMAKING OF CARCERAL BORDERS

Within abolitionist thought, the central insight is that systems of control, whether prisons, policing, or borders, are not inevitable responses to social problems, but historically contingent institutions that reflect particular conurations of power and value. Carceral systems emerge through the management of surplus populations and resources, producing forms of containment that are justified through narratives of safety and order (Gilmore 2007; Maynard 2025).¹⁸ These systems, in turn, generate the conditions that sustain them, as the harms they produce are used to justify further expansion, increasingly through technology (see Pruss et al. 2025).¹⁹

Applied to the border, the intensification of surveillance, enforcement, and technological control is part of a broader process through which mobility is rendered governable through restriction (Molnar 2024).²⁰ The framing of migration as a crisis or threat serves to legitimize the expansion of infrastructures that monitor and contain movement, even where such infrastructures exacerbate the very conditions they are purported to

¹⁷ Walia, H., 2021. *Border and Rule: Global Migration, Capitalism, and the Rise of Racist Nationalism*. Chicago: Haymarket Books, page, 215.

¹⁸ Gilmore, R.W., 2007. *Golden gulag: Prisons, surplus, crisis, and opposition in globalizing California* (Vol. 21). Univ of California Press. Maynard, R., 2025. *Policing Black Lives: State Violence in Canada from Slavery to the Present*. Revised and expanded edn. Halifax: Fernwood Publishing.

¹⁹ Pruss, D., Pullen-Blasnik, H., Stevens, N., Rahman, S., Belitz, C., Stapleton, L., Dharmaraj, M.G., Aizeki, M., Molnar, P., Pinch, A., Ryan, N., Lima, T., Widder, D.G., Tiwari, A., Zhāngsūn Brown, L.X., Sexton, J.S. and Nunes, P., 2024. *Prediction and Punishment: Critical Report on Carceral AI*. SSRN, 1 November. <https://doi.org/10.2139/ssrn.5017321>.

²⁰ Molnar, P., 2024. *The walls have eyes: Surviving migration in the age of artificial intelligence*. The New Press.

address (see also Moreno-Lax 2023).²¹ Abolitionist approaches therefore begin from a different premise. Rather than asking how borders can be made more efficient or humane, they ask what conditions would need to change for borders, as currently constituted, to no longer appear necessary. As Mariame Kaba has emphasized, abolition is about building alternatives that address the underlying causes of harm, including inequality, displacement, and lack of access to resources (Kaba 2021).²² In the context of migration, this involves shifting attention from the management of movement to the conditions that shape why and how people move in the first place. Such a shift has significant implications for how technology is understood.

For example, if AI systems are currently deployed to identify, predict, and control movement, then an abolitionist perspective invites us to consider how technological development might be redirected toward supporting mobility, rather than restricting it. Importantly, this type of rethinking does not imply a simple inversion. As Audre Lorde said, ‘you cannot unbuild a master’s house with the masters tools’ (1984).²³ Repurposing surveillance tools for some vague benevolent ends only incrementally reforms the system. Rather, we need more fundamental rethinking of what technologies are designed to do and whose interests they serve. Although, inversions of technologies traditionally used on marginalized communities toward powerful actors can also be empowering. For example, instead of developing AI to screen refugees at the border, why not use it to identify racist border guards? (Molnar 2024).²⁴ However, what we see again and again is that these technologies are NOT inverted, with their development continuing to relying on normative choices baked in by ethics of exclusion, prediction, and movement control, precisely the type of ossification that abolitionist frameworks try to ht against.

²¹ Moreno-Lax, V., 2023. The ‘crisification’ of migration law: Insights from the EU external border. *Queen Mary School of Law Legal Studies Research Paper*, No. 403/2023. Available at: <https://ssrn.com/abstract=4577364>.

²² Kaba, M., 2021. *We Do This ‘Til We Free Us: Abolitionist Organizing and Transforming Justice*. Chicago: Haymarket Books.

²³ Lorde, A., 1984. The master’s tools will never dismantle the master’s house. In A. Lorde, *Sister Outsider: Essays and Speeches*. Trumansburg, NY: Crossing Press, pp.110–113.

²⁴ Molnar, P., 2024. *The Walls Have Eyes: Surviving Migration in the Age of Artificial Intelligence*. New York: The New Press.

Decolonial approaches further deepen this critique by situating contemporary border regimes within longer histories of empire, apartheid, and racial hierarchies. For example, as Achiume (2019)²⁵ has argued, modern migration controls must be understood in the context of the global inequalities produced through colonialism, in which the extraction of resources and labor from the Majority World has been accompanied by the restriction of mobility from those same regions. Indeed, as Achiume reminds, all borders are racial borders (2021; see also Nyabola 2023).²⁶ From this perspective, borders can be understood as functioning not only as mechanisms of state sovereignty (see also Molnar 2021, see also Jones and Johnson 2016),²⁷ but also as tools for maintaining a global order in which movement is explicitly unevenly distributed (Nyabola 2020).²⁸ As Mbembe reminds: ‘The ultimate expression of sovereignty largely resides in the power and capacity to dictate who may live and who must die’ (Mbembe 2003).²⁹

The work of Eve Tuck and K. Wayne Yang further underscores the importance of attending to the material and epistemic dimensions of decolonization, cautioning against approaches that seek to address injustice without confronting the underling structures and logics that produce it (Tuck and Yang 2012).³⁰ In the context of digital border governance, efforts to reform technologies without addressing the underlying logics of exclusion risk reproducing colonial dynamics in new forms, even where they are framed in terms of innovation or progress. Similarly, Sherene Razack’s work on racialized spaces highlights the ways in which borders operate as sites where hierarchies of belonging are both enacted and

²⁵ Achiume, E.T., 2019. Migration as decolonization. *Stanford Law Review*, 71(6), pp.1509–1574.

²⁶ Achiume, E.T., 2019. Migration as decolonization. *Stanford Law Review*, 71(6), pp.1509–1574; Nyabola, N., 2023. *Digital Identities and Border Cultures: The Limits of Technosolutionism in the Management of Human Mobility*. Washington, DC: Atlantic Council Digital Forensic Research Lab (DFRLab). Available at: <https://www.atlanticcouncil.org/in-depth-research-reports/report/digital-identities/>.

²⁷ Jones, R. and Johnson, C., 2016. Border militarisation and the re-articulation of sovereignty. *Transactions of the Institute of British Geographers*, 41(2), pp.187–200.

²⁸ Nyabola, N., 2020. *Travelling While Black: Essays Inspired by a Life on the Move*. London: Hurst & Co.

²⁹ Mbembe, A., 2003. Necropolitics (trans. L. Meintjes). *Public Culture*, 15(1), pp.11–40. Page 11.

³⁰ Tuck, E. and Yang, K.W., 2012. Decolonization is not a metaphor. *Decolonization: Indigeneity, education & society*, 1(1), pp.1–40.

naturalized, positioning certain populations as perpetual outsiders whose movement must be regulated (Razack 2008; see also Mountz, Macklin, 2004 and others).³¹ These hierarchies are not simply reflected in legal frameworks. They are embedded within the everyday practices of governance, including the deployment of technologies that classify and monitor movement. Taken together, abolitionist and decolonial approaches converge in their insistence that contemporary border regimes are not neutral systems that can be optimized, but rather are political formations that must be interrogated at their core and ultimately disbanded. They challenge the assumption that the primary task of governance is to control movement, instead foregrounding questions of justice, redistribution, and collective responsibility.

Within this framework, alternative orientations begin to emerge as shifts in how mobility is conceptualized. One such shift involves redirecting investment away from surveillance infrastructures and toward forms of community support that enable safe and dignified movement (e.g., see Ghezelbash and Molnar, 2025).³² These approaches include not only material resources such as housing, healthcare, and legal assistance but also institutional arrangements such as community supports that recognize the legitimacy of movement as a social reality rather than a problem to be solved. A second shift involves expanding pathways for regularization and protection, challenging the conceptualization of so-called illegal migration that underpins much of contemporary border governance. By

³¹ Razack, S., 2008. *Casting out: The eviction of Muslims from Western law and politics*. University of Toronto Press. Audrey Macklin, "Disappearing Refugees: Reflections on the Canada -U.S. Safe Third Country Agreement," *Columbia Human Rights Law Review* 36 (2004): 101; Nicholas P. De Genova, "Migrant 'Illegality' and Deportability in Everyday Life," *Annual Review of Anthropology* 31, no. 1 (2002): 419; Jan Blommaert, "Language, Asylum, and the National Order," *Current Anthropology* 50, no. 4 (2009): 415; Jonathan Inda, *Targeting Immigrants: Government, Technology, and Ethics* (Oxford: Blackwell, 2004); Sara Ahmed, "Affective Economies," *Social Text* 22, no. 2 (2004): 117–39; Arjun Appadurai, *Fear of Small Numbers: An Essay on the Geography of Anger* (Durham, NC: Duke University Press, 2006), 49–85. See also Csernaton, R., 2018. Constructing the EU's high-tech borders: FRONTEX and dual-use drones for border management. *European Security*, 27(2), pp.175–200.; and Martin Lemberg-Pedersen and Eman Haioty, "Re -assembling the Surveillable Refugee Body in the Era of Data -Craving," *Citizenship Studies* 24, no. 5 (2020): 607–24.

³² Ghezelbash D and Molnar P, 2025. From Surveillance to Empowerment: Advancing the Responsible Use of Technology in Alternatives to Detention. Kaldor Centre for International Refugee Law, International Detention Coalition, and Refugee Law Lab, 2025.

creating more accessible and flexible mechanisms for entry and status, states can reduce the reliance on enforcement and surveillance, addressing the conditions and root causes that drive forced movement in the first place (see Walia 2021; Miller 2019; Bradley and de Noronha 2022).³³

A third orientation centers on the role of knowledge and data, particularly in relation to who controls the information that shapes migration governance (Nyabola 2023, Weitzberg 2020).³⁴ As discussed in earlier chapters, data extracted from people on the move is often used to reinforce systems of control and feed into global data sharing agreements predicated on exclusion of Majority World mobile communities (e.g., see Bigo 2020; see also Bonnett, G. 2020).³⁵ Decolonial approaches instead emphasize the importance of community-led data governance and data sovereignty, in which those affected by technologies have a say in how data is collected, used, and shared. For example, various First Nations and Indigenous groups have formed data trusts to safeguard and self-govern their data (see First Nations Information Governance Centre, 2019; Carroll et al. 2019).³⁶ These shifts challenges the assumption that data should be extracted, centralized, and controlled by states or corporations, opening space for more participatory and accountable forms of technological development.

³³Walia, H., 2021. *Border and Rule: Global Migration, Capitalism, and the Rise of Racist Nationalism*. Chicago: Haymarket Books; Miller, T., 2019. *Empire of Borders: The Expansion of the US Border Around the World*. London: Verso Books; Bradley, G.M. and de Noronha, L., 2022. *Against Borders: The Case for Abolition*. London: Verso Books.

³⁴Nyabola, N., 2023. Africa's Digital Public Sphere. In *Routledge Handbook of African Political Philosophy* (pp. 315–329). Routledge. Weitzberg, K., 2020. Biometrics, race making, and white exceptionalism: The controversy over universal fingerprinting in Kenya. *The Journal of African History*, 61(1), pp.23–43.

³⁵Bigo, D., 2020. Interoperability: A political technology for the datafication of the field of EU internal security? In D. Bigo, T. Diez, E. Fanoulis, B. Rosamond and Y.A. Stivachtis (eds.) *The Routledge Handbook of Critical European Studies*. Abingdon: Routledge, pp.400–417; Bonnett, G., 2020. How the Five Eyes countries share immigration data. *Radio New Zealand*, 30 December. Available at: <https://www.rnz.co.nz/news/national/433786/how-the-five-eyes-countries-share-immigration-data>; Carroll, S.R., Rodriguez-Lonebear, D. and Martinez, A., 2019. Indigenous data governance: Strategies from United States Native nations. *Data Science Journal*, 18(1), p.31. <https://doi.org/10.5334/dsj-2019-031>.

³⁶First Nations Information Governance Centre, 2019. First Nations data sovereignty in Canada. *Statistical Journal of the IAOS*, 35(1), pp.47–69. <https://doi.org/10.3233/SJI-180478>;

Finally, these orientations point toward a more fundamental question: whether the border, as currently constituted, can ever be meaningfully reformed at all, or whether its underlying logics must be dismantled all together (see Washington 2024). Open borders and border abolitionist scholarship attempts to address this question directly, as a critique of the taken-for-granted assumption that mobility must be governed through restriction, exclusion, and control. Indeed, various scholars such as Joseph Carens have long argued that the moral justification for restricting movement is far less self-evident than is often assumed, particularly in a world structured by deep global inequalities (Carens 2013).³⁷ More recent abolitionist work extends this critique by situating borders within broader carceral systems, arguing that migration enforcement operates through the same logics of containment, racialization, and disposability that underpin prisons and policing (Walia 2021, Shah 2024, Washington 2024).³⁸ From this perspective, the goal then is not how to make borders more humane or efficient, but rather how we can move beyond a system that produces harm as a condition of its operation, recognizing the inevitability and inalienability of human movement.

Importantly, border abolition is not reducible to calls for immediate removal of all controls, nor does it always imply an absolute absence of governance. Rather, there can be a reorientation of how mobility is understood and organized, shifting from a paradigm of enforcement to one of responsibility, redistribution, and care. Contemporary migration patterns are inseparable from histories of colonial extraction and ongoing global inequality (Achiume 2019),³⁹ raising questions about the legitimacy of exclusionary border regimes in the first place. Abolitionist approaches therefore foreground the need to address the structural conditions that produce displacement, while simultaneously expanding pathways for movement, regularization, and belonging. Within such a framework, the role of technology would necessarily be transformed: no longer a tool for sorting, deterrence, and predictive control, but potentially a means of facilitating access, supporting mobility, and strengthening community

³⁷ Carens, J., 2013. *The Ethics of Immigration*. New York: Oxford University Press.

³⁸ Walia, H., 2021. *Border and rule: Global migration, capitalism, and the rise of racist nationalism*. Haymarket books. Shah, S., 2024. *Unbuild walls: Why immigrant justice needs abolition*. Haymarket Books; Washington, J., 2024. *The Case for Open Borders*. Chicago: Haymarket Books.

³⁹ Achiume, E.T., 2019. Migration as decolonization. *Stanford Law Review*, 71(6), pp.1509–1574.

infrastructures. Therefore our task is not just to regulate AI at the border, but to imagine, and begin to build, a world in which the border itself is no longer the primary site through which mobility is controlled.

The value of abolitionist and decolonial frameworks lies precisely in their divergent approaches and commitment to shift the terms of debate. This rethinking visibilizes the seemingly ‘inevitable’ assumptions that underpin current systems, making it possible to imagine futures in which the harms associated with border technologies are not simply managed, but fundamentally reconfigured, neutralized, and abolished altogether.

PRACTICES OF RESISTANCE AND ALTERNATIVE INFRASTRUCTURES OF MOBILITY

If abolitionist and decolonial frameworks invite a rethinking of the conceptual foundations of border governance and the border itself, then it is equally important to attend to the practices through which alternative logics of mobility are already being articulated and enacted. Because the world is already resisting (e.g., see the global project, *The AI Resist List* 2026).⁴⁰ These practices do not necessarily present themselves as coherent or unified models, nor do they operate outside the constraints imposed by existing border regimes. Rather, they emerge within and against these regimes, often in fragmented and provisional ways, reflecting the conditions under which people on the move navigate systems that are designed to monitor, classify, and restrict them.

Instead of viewing people on the move as passive subjects of technological governance, we must recognize mobile communities as active agents who engage with, resist, and reconfigure the systems that shape their movement (Mahmoudi 2025; Molnar 2026).⁴¹ This recognition is central in emphasizing the agency of people on the move and displaced communities, highlighting the ways in which they develop strategies,

⁴⁰ AI Resist List, 2026. *The AI Resist List*. Created October 2025–May 2026. Available at: <https://airesistlist.org/>; see also Molnar, P., 2026. The world is already resisting AI. Now, there is a list to prove it. *Tech Policy Press*, 21 May. Available at: <https://www.techpolicy.press/the-world-is-already-resisting-ai-now-there-is-a-list-to-prove-it/>.

⁴¹ Molnar, P., 2026. Revolution begins with care: Confronting the surveillance-dominated polycrisis. *openDemocracy*, 27 February. Available at: <https://www.opendemocracy.net/en/surveillance-tech-facial-recognition-revolution-begins-with-care-confronting-polycrisis/>; Mahmoudi, M., 2025. *Migrants in the Digital Periphery: New Urban Frontiers of Control*. Oakland: University of California Press.

networks, and forms of knowledge that enable them to navigate hostile environments (Mezzadra and Neilson 2013; Tazzioli and De Genova 2023).⁴² Within this framework, technology is not only a tool of control, but also a site of contestation.

For example, both along the Mexico–United States border as well as various maritime routes across the Mediterranean, mobile networks have developed practices that engage directly with the technological infrastructures of surveillance. Secure communication tools, including encrypted messaging platforms and location-sharing applications, are used to coordinate movement, share information about routes, and avoid areas of heightened surveillance (Newell, Gomez, and Guajardo, 2016; Janetsky 2025).⁴³ These practices do not eliminate risk, nor do they operate independently of the systems they seek to navigate. Rather, they reflect an ongoing process of adaptation, in which individuals and groups respond to the distribution of surveillance by developing counter-infrastructures that enable movement under constrained conditions and producing their own sources of knowledge and expertise. Information about surveillance patterns, terrain conditions, and enforcement strategies is circulated within networks that operate largely outside formal governance structures, creating alternative modes of mapping and interpretation (see also Leurs 2023).⁴⁴ These forms of knowledge are often collective, emerging from shared experience rather than centralized authority, and they play a crucial role in shaping how movement is organized. In this sense, mobile networks of knowledge at the border directly participate in the border’s ongoing reconfiguration, challenging the assumption that control and power flows exclusively from the state.

A different, though related, set of practices can be observed in the context of the occupied Palestinian territories, where civil society organizations and advocacy groups like 7amleh have developed strategies for

⁴² Mezzadra, S. and Neilson, B., 2013. *Border as Method, or, the Multiplication of Labor*. Duke University Press. Tazzioli, M. and De Genova, N., 2023. Border abolitionism: Analytics/politics. *Social Text*, 41(3), pp.1–34.

⁴³ Newell, B.C., Gomez, R. and Guajardo, V.E., 2016. Information seeking, technology use, and vulnerability among migrants at the United States–Mexico border. *The Information Society*, 32(2), pp.176–191; Janetsky, M., 2025. TikTok becomes a tool of choice in cat-and-mouse game between migrant smugglers and authorities. *Associated Press*, 17 March. Available at: <https://apnews.com/article/tiktok-smugglers-mexico-us-migrants-immigrants-52ba1b44126f3c2b7887b808307ffa96>.

⁴⁴ Leurs, K., 2023. *Digital Migration*. London: SAGE Publications.

documenting and contesting the use of surveillance technologies (Goodfriend et al. 2021; Masharqa, 2020).⁴⁵ These efforts include the systematic collection of evidence related to AI-enabled monitoring systems, biometric databases, and predictive policing tools, with the aim of making visible the ways in which such technologies are used to regulate movement and control populations, resulting in the production of usable counter-knowledge. By gathering and disseminating information about the operation of surveillance systems in an apartheid state that is systematically erasing the Palestinian people, these groups seek to challenge the opacity that characterizes much of contemporary technological governance, creating resources that can be used in legal challenges, advocacy campaigns, and public discourse. In doing so, they engage directly with the dynamics of digital border governance, particularly the asymmetry between the visibility of those being governed and the opacity of the systems that govern them. These efforts also highlight the limitations of relying solely on formal legal mechanisms to address harm. Under occupation, where access to courts is restricted or where legal frameworks are ill-equipped to engage with the technologies in question, alternative forms of accountability become necessary. Documentation, storytelling, and public engagement function as tools for contesting power, even where they do not result in immediate legal remedies (see also Hunt 2018; Reed-Danahay, D., 2016).⁴⁶ In this sense, resistance operates through the creation of spaces in which alternative narratives and forms of evidence can emerge (see also Giudice and Giubilaro 2015).⁴⁷

⁴⁵ Masharqa, S., 2020. *Fake News in Palestine: Exploratory Research into the Content, Channels and Responses*. Haifa: 7amleh — The Arab Center for the Advancement of Social Media. Available at: <https://7amleh.org/storage/Research%20and%20Position%20Papers/Fake%20News%20Research.pdf>; Goodfriend, S., Bakri, B. and Sheikh Ahmad, R., 2021. *The Expansion of Digital Surveillance in Jerusalem and Impact on Palestinians' Rights*. Haifa: 7amleh — The Arab Center for the Advancement of Social Media. Available at: https://7amleh.org/storage/Digital%20Surveillance%20Jerusalem_7.11.pdf.

⁴⁶ Hunt, S., 2018. Researching within relations of violence: Witnessing as methodology. In D. McGregor, J.P. Restoule and R. Johnston (eds.) *Indigenous Research: Theories, Practices, and Relationships*. Toronto: Canadian Scholars Press, pp.282–295; Reed-Danahay, D., 2016. Participating, observing, witnessing. In S. Coleman, S.B. Hyatt and A. Kingsolver (eds.) *The Routledge Companion to Contemporary Anthropology*. Abingdon: Routledge, pp.57–71.

⁴⁷ Giudice, C. and Giubilaro, C., 2015. Re-imagining the border: Border art as a space of critical imagination and creative resistance. *Geopolitics*, 20(1), pp.79–94.

What unites these various diverse practices is a common orientation toward the reconfiguration of power. They challenge the assumption that technological governance is unidirectional process, imposed from above, by demonstrating the ways in which it can be engaged, contested, and, in some cases, repurposed (see also Jones 2012).⁴⁸ At the same time, they underscore the limitations of such engagement, as the capacity to resist or reconfigure systems is often constrained by the broader structures within which they operate. These constraints are particularly evident when considering the relationship between alternative practices and the infrastructures of the border-industrial complex. While mobile networks and civil society organizations may develop counter-infrastructures, they do so within environments that are shaped by far more powerful systems of surveillance and control. The asymmetry between these systems is significant, raising questions about the extent to which alternative practices can scale or be sustained over time.

Yet to focus solely on these limitations would be to overlook the importance of these practices as sites of possibility already at work. They demonstrate that alternative approaches to mobility are not purely speculative, but are already being enacted in ways that challenge dominant logics. They also provide insight into how technology might be used differently, not as a tool for restriction, but as a means of support, coordination, and empowerment (e.g., see Lubari 2026; Abdelkarim Ali 2026).⁴⁹ The practices described here can be understood as fragments of a broader reimagining of the border, one that is not yet fully articulated but is nonetheless already taking shape through the everyday actions of those who navigate and contest its infrastructures.

⁴⁸ Jones, R., 2012. Spaces of refusal: Rethinking sovereign power and resistance at the border. *Annals of the Association of American Geographers*, 102(3), pp.685–699.

⁴⁹ Lubari, M. (2026, February 6). A broken lifeline: Fixing humanitarian aid's missing link. openDemocracy. <https://www.opendemocracy.net/en/we-must-teach-refugees-fix-phones-devices-uganda-rhino-camp/> Ali, A. A. (2026, February 6). Healing beyond borders: Digital mental health support for refugees. openDemocracy. <https://www.opendemocracy.net/en/mindease-mental-health-refugees-somaliland-digital-support/>.

RECLAIMING TECHNOLOGY, REIMAGINING MOBILITY

Our final task in this chapter is to question the assumption that technology must remain central to that governance at all. Rather than beginning from the premise that digital systems are inevitable (also Hao 2025),⁵⁰ and therefore must be redesigned or improved, it becomes necessary to ask what is obscured when technological solutions are treated as the default response to mobility. The practices outlined in the previous section suggest a different starting point: one grounded not in surveillance, prediction, or optimization, but in the everyday work of supporting movement through community networks, mutual aid, and collective forms of care.

Approaching the question in this way requires returning to a central insight that has shaped this book: that the harms associated with technologies at the border are not incidental nor external to their operation, but are produced through their integration into what I have described as border necrotechnics, an assemblage of infrastructures, practices, and logics through which mobility is governed by exposure, classification, and differential valuation of life. These technologies do not stand apart from systems of control. Rather, they are constitutive of them, embedding and extending the conditions under which some lives are rendered governable, and others disposable. If technologies are shaped by the logics they serve, then rethinking those logics may also entail reducing the reliance on technological mediation altogether. In other words, the problem is not only how AI is used, but why it has come to occupy such a dominant role in the governance of mobility in the first place (including in my own scholarship!). In other words, as Dan MacQuillan has argued, we need an anti-fascist approach to AI, one that fights against the primacy and inevitability of these systems, exchanging them for networks of mutual aid, care, and collective freedom (2022).⁵¹ Systems of surveillance and prediction are often presented as necessary because migration is framed as a problem of risk and control. However, if mobility was instead approached as a social reality requiring support, redistribution, and care (see also Spade 2026),⁵² the centrality of such systems would begin to recede.

⁵⁰Hao, K., 2025. *Empire of AI: Dreams and nightmares in Sam Altman's OpenAI*. Penguin Group.

⁵¹McQuillan, D., 2022. *Resisting AI: An anti-fascist approach to artificial intelligence*. Policy Press.

⁵²Spade, D., 2026. *Mutual aid: Building solidarity during this crisis (and the next)*. Verso Books.

Technologies that are currently used to monitor and restrict movement are built upon assumptions about what movement represents and how it should be governed. Reimagining their role therefore requires engaging with those assumptions, questioning the logics of deterrence, risk management, and classification that have come to define contemporary border regimes (see also Washington 2024).⁵³ One way of conceptualizing this reorientation is through the idea of rights-respecting and community-centered technological development, in which the design and deployment of systems are shaped by the needs and perspectives of those most affected by them. Such an approach stands in contrast to the top-down models that currently dominate border governance, where technologies are developed by states and corporations with limited input from the communities they impact.

In practice, this approach will involve a shift toward participatory models of design (Chock 2020),⁵⁴ in which people on the move are not merely subjects of technological systems, but active contributors to their development. This paradigm includes the co-creation of tools that support navigation, communication, and access to services, as well as the establishment of governance structures that enable communities to shape how data is collected, used, and shared (Migration and Technology Monitor 2026).⁵⁵ These interventions are oriented toward enabling movement rather than restricting it, toward supporting individuals rather than categorizing them, and toward fostering collective resilience rather than individual risk management. They offer a different vision of what technology can do, one that is grounded in principles of justice and care rather than efficiency and deterrence.

At the same time, it is important to recognize the limits of these initiatives. Operating within environments that are shaped by powerful infrastructures of surveillance and control, they face significant constraints in terms of scale, sustainability, and impact. The resources available to community-led projects are often limited, and their capacity to influence broader systems of governance may be constrained by the structural

⁵³ Washington, J., 2024. *The case for open borders*. Haymarket Books.

⁵⁴ Costanza-Chock, S., 2020. *Design justice: Community-led practices to build the worlds we need*. MIT press.

⁵⁵ See for example Migration and Technology Monitor, & Refugee Law Lab. (2026, February). *Migration and Technology Monitor: Building a different world – From the ground up!* <https://static1.squarespace.com/static/626d808cc8cf094dc06d60e4/t/6985a6b3b95b552fd5785648/1770366693109/FINAL+MTM+REPORT-Feb+2026.pdf>.

conditions discussed in earlier chapters. Yet, these limitations do not diminish the significance of these approaches. Instead, they point to the need for broader shifts in how technology and its development is resourced. Redirecting investment away from surveillance infrastructures and toward community-based initiatives represents one such shift, as does the expansion of legal and institutional frameworks that support more inclusive approaches to mobility. These shifts must not be purely technical but also political, requiring changes in priorities, resource allocation, and institutional design.

Importantly, what abolitionist ethics reminds us of is that there is not a singular vision of the future, but a set of possibilities that are contingent upon how societies choose to understand and govern mobility (see also *Abolitionist Futures*, 2026; see Dixit 2025).⁵⁶ If migration continues to be framed as a threat, then technologies will be mobilized to contain, sort, and exclude, reproducing the patterns of harm identified throughout this book. If, however, mobility is recognized as a fundamental aspect of human life, shaped by global inequalities but not reducible to them, then it becomes possible to imagine forms of governance that prioritize support over restriction and forms of technologies that empower rather than harm. Rather than functioning as an instrument of surveillance, technologies could then be used to facilitate access to resources, to support communication and coordination, and to enhance the capacity of individuals and communities to navigate complex environments. Such reorientation does not imply a naïve optimism about the potential of technology, but rather, it is a recognition that its effects are shaped by the contexts in which it is developed and deployed. These contexts do not have to be immutable.

CONCLUSION: BEYOND THE RACIAL AND CARCERAL BORDER

We are here because you were there.

—A. Sivanandan (1980)⁵⁷

⁵⁶ Abolitionist Futures. (2026). *2026 reading list: Session 4: Policing, borders, anti-racism and abolition*. <https://abolitionistfutures.com/latest-news/2026-reading-group>; Dixit P. Towards anarchist abolitionist futures for violence prevention: Beyond ‘counterterrorism.’ *European Journal of International Security*. 2025;10(1):97–114. <https://doi.org/10.1017/cis.2024.45>.

⁵⁷ Sivanandan, A. (1990). *Communities of resistance: Writings on black struggles for socialism*. Verso Books.

This book has argued that the rise of technologies at the border is a transformation in how human movement itself is governed, one that is deeply entangled with histories of racialization and exclusion, practices of securitization, and the political economy of surveillance. Across the chapters, we have explored how digital systems participate in the production of suspicion, how they are embedded within infrastructures that extend the reach of the border, and how they are sustained through networks of state and corporate power that incentivize their expansion across the globe. At the same time, we have seen how these systems operate within governance gaps that limit accountability, enabling the deployment of technologies in ways that undermine legal protections while maintaining a veneer of legitimacy. The result is a border that is more difficult to contest, as power is distributed across systems that are at once pervasive and opaque.

Yet, these developments are not inevitable. Instead, they reflect normative choices about how migration is understood, about whose movement is valued, and about how technology is used to shape the conditions under which people live and move. These choices are embedded within institutions and infrastructures, but they cannot be thought of as being beyond contestation. The frameworks and practices explored in this final chapter suggest that alternative futures are indeed already very possible, even if they are not yet fully realized. Abolitionist and decolonial approaches challenge the assumptions that underpin contemporary border regimes, while practices of resistance and community-led innovation demonstrate that different forms of engagement are already taking shape (see also Brambilla and Jones 2020; Tsagarousianou, 2024).⁵⁸

To move beyond the racial and carceral border (and perhaps to undo the concept of the border itself), therefore, requires more than technological reform. It requires a rethinking of the foundations of migration governance, one that recognizes mobility as a social reality rather than a threat, and that seeks to address the conditions that produce harm rather than merely managing its effects. Within such a framework, technology could be reoriented toward supporting movement, enhancing autonomy, and fostering collective well-being.

⁵⁸ Brambilla, C. and Jones, R., 2020. Rethinking borders, violence, and conflict: From sovereign power to borderscapes as sites of struggles. *Environment and Planning D: Society and Space*, 38(2), pp.287–305. Tsagarousianou, R. (2024) 'The Datafication of Migrant Bodies and the Enactment of Migrant Subjectivities: Biometric Data, Power and Resistance at the Borders of Europe'. *Media, Culture & Society*, 46(4), pp. 688–705.

This line of thinking also opens onto a more expansive claim: that contemporary patterns of migration can be understood, at least in part, as a form of de facto reparation for historical and ongoing processes of colonial extraction, apartheid regimes, and environmental degradation, apartheid regimes. The wealth and stability of many Global North states have been built through practices that have systematically dispossessed and destabilized the Majority World, producing the very conditions that now drive displacement (Achiume 2019, 2021).⁵⁹ From this perspective, migration is not an external pressure on otherwise stable societies, but a movement that reflects entangled histories of exploitation and responsibility, and a reclaiming of power, too. The mobility of people, then, can be read not as a crisis to be managed, but as a political and ethical claim, a reparation that challenges the legitimacy of borders that continue to enforce inequalities produced through empire and extractivism (Nevins, 2019; Goldstone, 2024; Gonzalez, 2020; Souter, 2014; among others).⁶⁰ Framing migration as reparation does not resolve the complexities of its governance, but it does unsettle the assumption that restriction is the default or justified response, opening space for approaches that recognize movement as part of a broader landscape of global redistribution and repair.

⁵⁹ Achiume, E.T., 2019. Migration as decolonization. *Stan. L. Rev.*, 71, p.1509.

⁶⁰ See also Goldstone, Z., 2024. Migration as reparation for colonialism. *Res Publica*, 30(4), pp.763–781. Nevins, J., 2019. Migration as reparations. *Open borders: In defense of free movement*, pp.129–140. Gonzalez, C.G., 2020. Migration as reparation: Climate change and the disruption of borders. *Loy. L. Rev.*, 66, p.401. Souter, J., 2014. Towards a theory of asylum as reparation for past injustice. *Political Studies*, 62(2), pp.326–342.

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APPENDIX A: KEY READINGS

- Abusalim, Jihad, Jennifer Bing, and Michael Merryman-Lotze (eds.), *Light in Gaza: Writings Born of Fire* (Haymarket, 2022)
- Achiume, E. Tendayi, 2019. Migration as decolonization. *Stan. L. Rev.*, 71, p.1509.
- Awkward- Rich, Cameron, “Meditations in an Emergency” (poem)
- Benjamin, R. (2019) *Race after technology: abolitionist tools for the new Jim code*. Cambridge: Polity Press.
- Noble, S.U. (2018) *Algorithms of oppression: how search engines reinforce racism*. New York: NYU Press.
- De Genova, N. (2013). Spectacles of migrant ‘illegality’: the scene of exclusion, the obscene of inclusion. *Ethnic and Racial Studies*, 36(7), 1180–1198.
- El Akkad, Omar, *One Day, Everyone Will Have Always Been Against* (Knopf, 2025)
- García Hernández, C.C. (2014) *Crimmigration law*. Washington, DC: American Bar Association.
- Kaba, Mariame and Andrea J. Ritchie, *No More Police: A Case for Abolition* (The New Press, 2022)
- Kaba, Mariame *We Do This ’Til We Free Us: Abolitionist Organizing and Transforming Justice* (Haymarket, 2021)
- Liew, Jamie, *Dandelion* (Arsenal Pulp Press, 2022)

- Loewenstein, A., 2024. *The Palestine laboratory: How Israel exports the technology of occupation around the world*. Verso Books.
- Mbembe, A. (2003) 'Necropolitics', *Public Culture*, 15(1), pp. 11–40.
- Miller, Todd *Empire of Borders: The expansion of the US border around the world*. (Verso Books, 2019.)
- Montgomery, Nick and carla bergman, *Joyful Militancy: Building Thriving Resistance in Toxic Times* (AK Press 2017)
- Olufemi, Lola, *Experiments in Imagining Otherwise* (Hajar Press, 2021)
- Schenwar, Maya and Kim Wilson, eds. *We Grow the World Together: Parenting Toward Abolition* (Heymarket 2024).
- Shihab Nye, Naomi, "Red Brocade" (poem)
- Smith, Maggie, "Good Bones" (poem)
- Spade, Dean, *Mutual Aid: Building Solidarity During This Crisis (and the Next)* (Verso, 2020)
- Tungohan, Ethel, *Care Activism: Migrant Domestic Workers, Movement-Building, and Communities of Care* (University of Illinois, 2023)
- Washington, John, *The Case for Open Borders* (Heymarket 2024)
- Ziadah, Rafeef, "We Teach Life, Sir" (poem)

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