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Border matters: situations, technopolitics, and inscriptions

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ABSTRACT

Borders are material arrangements that do not evolve seamlessly. The technologies of border and immigration enforcement are plagued with *what ifs*, arrangements that do not pan out, and futures that never materialize but temporarily have us imagine and inhabit specific conditions. Enforcement infrastructures are productive. They are constructed in the pursuit of political objectives. Borders are constituted through matter that institute and are made through relations, practices and ideas; they draw/are drawn together by people and organizations. To examine smart borders in this manner is to tend to their material and semiotic dimensions. It is to observe, describe, recompose, and question its moments of emergence as differentiated relational arrangements across time. This essay, which builds on critical race and feminist STS, border studies, and American studies, is a methodological reflection on how to excavate border matters as sedimented assemblages. It calls for the study of borders through historical methods and an ethnographic sensibility attuned to relations in situations, technopolitics, and inscriptions.

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‘When was the smart border’? The question from Philipp Seufferling and Michelle Pfeifer, which initially framed a conference held in November 2023 in Dresden with speakers from across the world, shifts the focus away from ‘smart borders’ as novelty and as a thing. First, it puts stress on time in relation to contemporary informational approaches to border enforcement because public expectation is for so-called smart borders to be new, innovative interventions. As if all past practices had been thrown out the window in favour of a new arrangement. To think about smart borders in relation to time is to wonder what a historical approach might offer to understand the present. Such invitation offers exciting analytical pathways whereby genealogies

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and the *longue durée* are traced, and smart borders are understood in relation to a wide array of media, communication, and information technologies over time.

A media archaeological approach and theories of technological design, however, would caution that there is no neat linear path connecting all sorts of sociotechnical arrangements over time (Zielinski 2006, Huhtamo and Parikka 2011, Parikka 2012). The systems enrolled in border making do not evolve seamlessly. Instead, border and immigration enforcement technologies are plagued with *what ifs*, arrangements that did not pan out, and futures that never materialized but temporarily had us imagine and inhabit specific conditions. Enforcement technologies are productive as they institute relations and practices, enact ideas, draw people and organizations together, and more. The generativity of smart borders is equally filled with harms, errors, glitches, and escapes that trouble rationales of efficiency and imperial fantasies in the will to power. Perhaps one way forward is to think of these systems as sedimented assemblages that become harder and harder to tease apart from one another over time. This is what Michelle Pfeifer and Philipp Seufferling highlight in the introduction to this special issue as the temporalities of media and technology. A media archaeological inquiry offers a means to study these assemblages as they are constituted in time and space, and as temporary orderings of a time to come.

Archaeology is understood here not as a search for origins; it is the descriptive analysis of discourse's anatomy, its associations and its ordering of objects in the instance of their flicker. In *The Archaeology of Knowledge*, historian Michel Foucault (1972, p. 25) invites us to be prepared to perceive 'that punctuality in which [a discourse] appears', though especially to dig for 'that temporal dispersion that enables it to be repeated, known, forgotten, transformed, utterly erased, and hidden, far from all view, in the dust of books'. The sudden irruption to which he alludes resonates with philosopher Walter Benjamin's conception of articulating the past historically. It is not a positivist bent imagining the possibility of apprehending the past *wie es eigentlich gewesen* (as it actually was), though some interpret it this way. What Foucault strove to achieve through his attention to temporal dispersions, repetition, and transformation was, as Benjamin (1968 [2007], p. 255) concluded decades earlier, 'to seize hold of a memory as it flashes up at a moment of danger'. This memory, or discursive formation, affects not only those who are rattled by it but also those found within its boundaries in time and space. Said differently, the archaeological approach proposed here charts the flashes of sociotechnical arrangements for bordering by showing how its elements find within such arrangements their place and law of emergence. It shows how these arrangements produce subjects, objects, relations, and modes of encounter, differentiation, and coordination.

Here is where a second sense of ‘when’ shifts our approach to smart borders from a thing to a relation. I draw from Star and Ruhleder’s (1996, pp. 112–113) conceptualization of infrastructures not as a ‘what’ but a ‘when’. Infrastructures are generally construed as substances that fall to the background. Instead, Star and Ruhleder rightly note, infrastructures are embedded into other structures, transparent to use in the support of other tasks with reach beyond a single event or site of practice. And smart borders are infrastructures since they are fundamentally relational, ordering and ordered by organized practices, ideas, actors, and artefacts. In approaching smart borders in this manner, we are drawn to their material and semiotic dimensions in time.¹ The temporal dimension (‘when’) of infrastructures is critical for it stresses they are not static matter but working arrangements – both assemblages that make action possible yet are simultaneously constituted through work. As Pfeifer and Seufferling propose, borders are infrastructures that require ‘ever-ongoing cultural work of legitimation and naturalization’. The pragmatic question then is how and where borders are made. Where is the action, where is the work that constitutes them?

What follows is a methodological reflection for the study of borders. To observe, describe, and recompose their moments of emergence as differentiated relational arrangements across time. Borders are embodiments in the distinction of imaginaries, communities, and territory. This essay excavates border matters as sedimented assemblages. Practices and materials are built upon layers of other practices and materials that are seemingly superseded yet are haunting futures past. How then do we study sedimented assemblages? Ideas in this article are informed by science and technology studies’ (STS) reflexivity in the examination of infrastructures and their making, especially those at the heart of government.² Similarly, this work is shaped by the expansive critical ethnic studies scholarship that studies immigration and border enforcement in the U.S. as projects of governmentality and expressions of racial formations.³ To these fields, the article contributes careful consideration of borders as fundamental infrastructures of governance and differentiation while identifying their means of operationalization. I draw from historical methods, employ an ethnographic sensibility attuned to relations, and rearticulate methodological frames such as situations, technopolitics, and inscriptions as means through which to recompose and question practices of border making.

Border matters are about engaging the discursive regimes that make borders as much as their material circuits and practices. An ecological approach does not presume existing boundaries of what is deemed relevant or irrelevant. Informed by situational analysis, this work is empirically driven to document and interpret relations between heterogeneous elements in the constitution of material arrangements. When it comes to borders, situations are ecologically interpreted by following all constitutive elements and

examining their interactions and trajectories with an aim to understand their complexities. Borders embody arrangements that represent and seek to achieve political goals. This leads me to build on the framework of technopolitics in relation to borders. Borders are technopolitical phenomena because they are the products of the political and cultural configurations of technical things and the operations of sovereignty.⁴ Borders are doubly constructed by historical actors in place and time as much as by us, analysts. The notion of border matters stresses the multiplicity of elements bound together in the pursuit of political aims. It requires reflexive attention to the work conducted to make borders in the past for an imagined future, and in the present as a means of understanding both the imagined past as well as what remains and endures.

The matter of border technopolitical regimes

Let me tell you a story. Back in December 2001, three months after the attacks of September 11th in the United States, the U.S. and Canadian governments signed a declaration in which they announced their collaborative venture to institute 'smart borders' in North America. The Mexican government was conspicuously absent from the declaration which Tom Ridge, the inaugural secretary of the Department of Homeland Security, promised would lead 'to making North America more secure and more prosperous'. Using biometric identifiers such as retina scans, fingerprints, and voice recognition, both governments hoped to more easily identify border crossers who pose no risk so that they can speed along the way. After all, the four goals at the heart of the smart borders declaration were: 'the secure flow of goods, the secure flow of people, secure infrastructure, and coordination and information-sharing in the enforcement of these objectives'. John Manley, the Canadian Foreign Affairs Minister at the time, described these smart borders as a 'seamless system'. Concern for both governments was on 'mak[ing] it easier for the average U.S. or Canadian resident to cross the border' through pre-screening and clear identification techniques (CNN 2001). The discourse of smart borders then was tethered to notions of security and prosperity in the efficient and optimized circulation of goods and capital, and the management of risk. As U.S. government officials struggled to reinstitute a semblance of control in the aftermath of 9/11, the bilateral pursuit of smart borders promised a secure future unlike the dumbness of the past – the errors, mistakes, and gaps that materialized national vulnerability. And yet, the past returned with its promises of futurity as computer technologies continued to represent a sense of reliability embodied through their logical structures. The language of seamlessness and of smooth cool (optimized) logics builds on historical public understandings of computers as embodiments of

highly rational and hierarchical structures that disavow human agency even as they correct human fallibility.⁵

Border technopolitical regimes institute a specific style to the making of sovereignty. Regimes are enrolled by human actors in prescribing the kinds of elements – such as peoples, knowledge, artefacts – that can, ought to, and will be included or excluded from them. Border technopolitical regimes classify, differentiate, and govern land, people, goods, and rights. Sovereignty here is that which constitutes the conditions of dispossession and exploitation so necessary in settler colonialism and capital. ‘Wherever there is dispossession, wherever there are people who manage to survive such theft in liberal democracies’, Mohawk anthropologist Audra Simpson (2020, p. 688) argues, ‘sovereignty will just as surely appear’. These are the coordinated violences executed through arrays of knowledges and techniques regulating the everyday by enacting claims of property, exclusion, and the right to kill (Ong 2006, p. 4, Simpson 2020, p. 689). The matter at heart then is to identify and describe the historical entities involved in governing the material boundaries of these regimes without which imperial and national formations could not exist.

A situational approach to the border as a regime does not presume relevance and significance but instead seeks to draw them out through investigation and analysis. Border matters constitute a response to the contingencies of *situations* rather than *contexts*. Where contexts are treated as exogenous to, perhaps impinging on the matter of concern, situations require an ecological understanding whereby its elements are not just in relation to one another but constitutive of one another. A situation, as John Dewey (cited in Clarke *et al.* 2022, p. 6) suggests, ‘is not a single object or event’ but a unique amalgam binding elements into a whole. Context, as sociologists Clarke *et al.* (2022, p. 8, 18) argue, ‘denotes that which *surrounds* something, but assuredly is not part of it’. Situations require grappling not only with abstract processes but with heterogeneous elements (ie., actors, ideas, practices, collectivities, organizations, historical processes, nonhuman entities), and their spatially and temporally constituted relations. The ecological dimension of situations seeks to understand the nature of relations and action across arrays of people and things in arenas of representations, processes of work, and entangled discourses (Clarke and Star 2008, p. 113). Pre-emptively binding relations to the law or economics, to name two common arenas, constrains analysis to readymade categories regardless of what empirical evidence may suggest. In other words, attention to borders through situations and ecologies represents an effort to document, understand, and analyze the relations and actions that make them by carefully following their trajectories, wherever those may lead.

Research on the US Green Card shows, for example, that policies of migrant identification articulated in legislation like the Alien Registration

Act of 1940 require practices and material arrangements of connectivity and referentiality (Chaar López 2020). Imaginaries of the racialized enemy were integral to routines of identification. The matter of identification not only pursued distinct political objectives around racialized populations – especially ethnic Japanese –, but also instituted its own logics that shaped policy and communities. Intake forms were designed to record biometric and biographic data about border crossing applicants and some of it was inscribed into identification cards to be used in future attempts to enter the U.S. through its ports of entry. Forms became part of ‘alien files’, as they were known, and were combined with a variety of other files that had grown since the Naturalization Act of 1906. Forms and files were then stored in filing cabinet systems known as indexes at Immigration and Naturalization Service (INS) for future reference and corroboration. Alien files stored in the INS Master Index attempted to anchor the migrant body just as they indexed it – singling out the body from the crowd and translating the body into sets of data that could distinguish it. Alien files then led to the design, manufacture, and use of alien identification cards like the Green Card which helped produce the border and became instrumental in the management of migrants as sources of labour.⁶ Identification at and beyond ports of entry required a variety of actors and practices – companies that researched and designed identification systems which worked in tandem with systems of record keeping and corroboration. All of these would remain hidden were we to continue to black box the border as a legal or policy construct rather than tend to it as a technopolitical regime of artefacts, inscriptions, practices, ideas, and actors that materialize borders.

To study smart borders through situational analysis moves us past treating them as content media and the content of media. Smart borders require a mode of inquiry that accounts for borders as infrastructures, as associated static and dynamic elements in the functioning of a system – as material implements, people, institutions, ideas, and practices (Star and Ruhleder 1996, Bowker *et al.* 2010, pp. 98–99). To conceive borders as infrastructures means to tend to them as networks of human and nonhuman actors that themselves are both networks and points (Callon and Law 1997, p. 174). Engaging borders or any associated technology deployed for border making such as an identification card, a ground sensor system, or a drone requires an examination of their process of composition. Composition unfolds through interrelationships. What are the elements through which smart borders are made and what conditions of possibility do smart borders enable? Take drone surveillance used in U.S. border enforcement since 2004 (chapter 3 in Chaar López 2018). It is not just video work but the coordination of field operations through video files, databases, technical standards, protocols of agent and headquarter communications, and protocols of detention and apprehension. It is the delegation of visual

identification to machine vision, and the interaction between machine vision, agents in the field, agents in headquarters, and targeted subjects. Drone surveillance is also ideas about air power, notions of standardization and identification, imaginaries of (un)belonging, legal rule, and more. On the one hand, we find the encounter, interaction, coordination, and delegation of/between elements, those which make and embody boundary making. And on the other hand, there are the elements that such composition produces, the objects (e.g. classifications, territories), subject positions, relations, and the like. Studying this process means uncovering the stabilization of networked associated elements that come to represent and enact borders.

The etymology of the word 'border' is of interest here. It comes from the term *bordure*, related to husbandry, which in the early fourteenth century named the 'broad, coloured band surrounding the shield'. *Bordure* in turn comes from the Old French *bordeure*, or the 'seam, edge of a shield'. Border's association with the edges of a city or country did not emerge until the late-fourteenth century. Yet the term's link to defence, to protection, remains immanent to the geopolitical demarcation. In Spanish, the term for border is *frontera* and its Latin root, *frons*, names forehead, front, a person's countenance, and façade. Over time the Latin term *frontaria* maintained its association to the frontal part of a structure or that through which we came to identify it by naming the limit between political divisions or geographical regions (Gómez da Silva 2012, p. 312). *Frontaria* was a zone of encounter and demarcation, both of which were significant practices in the management of territories, its peoples, and materials. It is not surprising that the U.S. frontier drew from this rich linguistic history to name that which, from the settler's perspective, neighbours unmarked or foreign territory. And so, the concept of 'borders' is irremediably entangled to the function of a material and symbolic interface of encounters, distinctions, and negotiations between (often antagonized) subjects, between spaces, and between subjects and spaces.

The association of heterogeneous elements that constitute borders means that agency is distributed. There are no master users but chains of translation, delegation, and coordination. This analytical manoeuvre is not meant to disregard the grave and violent practices at the heart of border making, but rather to document its expansive network. Borders in this sense are like the laboratory discussed by science studies scholars Latour and Woolgar (1986, p. 68). They borrow from existing structures, arrangements, and well-established knowledge, incorporating them into pieces of routines or artefacts, and thereby harnessing their enormous power for their own purposes. The distribution of agency in associated material implements undoes Western conceptions of the individual rational figure which are central to the black boxing of stabilized technologies. Even though the operation of drone surveillance for U.S. border enforcement, for example, attempts to disavow

human involvement through practices of unmanning, an attunement to the distribution of agency follows the collaborative practices among different government agencies, companies, people, and machines (Chandler 2020, Chaar López 2024). Otherwise, we can unintentionally reproduce the solutionist fantasies of the techno-liberal subject and their dream of deploying delegates in the making of their humanity.⁷ The distribution of agency exposes the techno-liberal subject and their violence to critique.

Analysis of the production of a border as both a space and an infrastructural arrangement necessarily involves culture. It includes the experience of such production, of how actors come to understand and respond to the making of borders, how they live through and with border making. The rich and complicated scholarship tending to U.S. borders as geographical zones of knowledge production and contest is significant because it troubles the presumed naturalness of 'borders' just as it pushes us to consider the epistemological dimension of border areas. From Paredes (1958), Anzaldúa (1987), and González (2006) to Saldívar (1997), Stern (1999), Mora (2011), and St. John (2011), to name a few, these scholars get us to pay attention to literary and artistic representations, to technoscience as crucial to state making and to creating borders and citizens as objects of knowledge, and to everyday experiences of border spaces. Borders represent, as Saldívar (1997, pp. 13–14) suggests, 'the social space of subaltern encounters, the Janus-faced border line in which people geopolitically forced to separate themselves now negotiate with one another and manufacture new relations, hybrid cultures, and multiple-voiced aesthetics'. Saldívar's identification of culture as that heterogeneous fabric without which borders do not come to be is what informs so much of the inspiring trans/interdisciplinary work produced by Chicana/o studies, and borderlands studies thinkers and scholars. The social space of the border is a contact zone, he concludes, where actors meet each other though not necessarily in equal terms. And how marginalized or minoritized communities respond to these encounters is a paramount concern for much of this scholarship. The kind of border matters I propose contributes to this intellectual tradition, first articulated by Saldívar, devoted to *(trans)frontera* cultures and difference by highlighting the processes and relations through which cultures produce borders. Border matters are as much the discursive regimes people inhabit and navigate as the technopolitical arrangements implemented to produce territorialized spaces – those of nation-states, of capital, and of futures to come. Approaching border matters then means not just tracing but interrogating the embodied epistemological dimensions of interfaces of demarcation, separation, encounter, subjugation, contestation, and flow.

Research on border matters, thought in terms of the history of smart borders, builds on what I call the cybernetic border. This is a border technopolitical regime organized through recursive practices of data capture,

storage, processing, circulation, and communication. And while some readers might wonder about visual techniques represented by the operation of cameras and drone video surveillance, I argue these techniques are part of a greater assemblage designed to structure, organize, and materialize routines of border and immigration enforcement. These routines and feedback loops integrate the aural and the visual, the electromagnetic and the kinetic. The cybernetic border is an abstract and abstracting regime where sovereignty and information technologies are mutually contingent. Speaking about the emergence of software in the mid-twentieth century, digital studies scholar Chun (2011 [2013], p. 58, 103) invites us to account for 'a larger epistemic field of biopolitical programmability' whereby governing becomes both more personal and impersonal. Computers and computation are at the heart of smart borders, and actors come to think of them as offering users an engagement with information that is logical, flexible, programmable, and transmissible. Borders as artefacts that are neatly articulated through information systems redeploy the belief that order stems from order, that border order emanates from ordered logics even when actual operations tend to demonstrate the imperial disorder of things. Smart borders and other cybernetic arrangements restructure the process of border crossing in binary and informational terms, in yes/no routines: entries and exits, valid and invalid identifications, acceptable and excludable migrants.

Borders are constructed through inscriptions, the traces that constitute them and the relations they produce. Inscriptions are those materials through which designers of a technical object define its actors, values, affordances, political goals, and more. Yet technical objects themselves are embodiments of these inscriptions, for they can represent a more durable and seemingly more reliable expression of the script they are set to follow (Akrich 1992, pp. 207–208, Johnson 1988, p. 306). Consider how a Border Patrol agent is trained to follow orders and conduct actions, many of which can be found in training manuals, which are learned from demonstrations, and must be repeatedly practiced until the agent comes to embody values of vigilance in protection of the nation. The inscription of Border Patrol 'sign cutting' – interpreting alterations to soil and flora as means of recognizing the movement of peoples crossing the border without inspection – is translated into the operation of ground seismic sensors integrated into smart borders. Such sensors are thought to not get distracted, not tire, and can be pre-inscribed to identify suspect behaviour beyond ports of entry. Inscriptions are encoded in diverse materials like texts, bodies, and machines.

The task of the analyst of border matters is to describe and interrogate the arrangements of heterogeneous elements through which borders are made. Asking what the genres of the dominant border regime are is necessary. To treat archival traces for any border regime as 'sites of knowledge retrieval' is insufficient for, as anthropologist Stoler (2002, p. 90) proposes, we must

approach archives as sites 'of knowledge production'. Archives of border regimes include government reports, Congressional hearings, corporate memoranda, user manuals, video footage, and more. Borders are expressions of associated technical objects that participate in building networked traces of state work. They are records of bureaucratic thought in action, materials that not only produce its subjects and objects of intervention while drawing elements together but that make up disparate notions of what constitutes authority. Inscriptions can establish conventions of action that grow into a supposedly natural order. They tell 'moral stories', they set out 'precedent[s] in the pursuit of evidence', and they set out carefully arranged yet contingent scripts for actors to play out (Stoler 2002, p. 103). Investigating the archives of border regimes, then, is about adopting a reflexive standpoint whereby we investigate how such archives were composed and how they compose sociotechnical arrangements. We question what relations such arrangements make possible, what knowledges are afforded by this archive, and what our role as analysts is in all of this. Efforts by actors in the past (and the present) to order the border are but actions in process, momentary decisions built in dust not in concrete. They are attempts to cohere that which is incoherent.

Conclusion

Smart borders require careful attention to border matters. This means adopting an ecological approach to relations between elements that do not anticipate them but allows them to emerge from empirical engagement with a variety of materials. Assuming a critical standpoint means that smart borders or their other cybernetic brethren are not already transforming everything and anything, and instead, that we interrogate the processes, practices, ideas, institutions, and arrangements that constitute the diagnosis of the problem just as much as its purported solution. This means tracing the production of artefacts and their inscriptions, examining the kinds of prescribed behaviours they are meant to govern and that are instilled upon actors. Doing so requires an acknowledgement of the contingency and distribution of agency by following the translation and coordination of elements just as much as how often they fail to do so. Throughout these networked relations, harms, gaps, and frictions occur. The analysis of smart borders proposed here approaches archival materials (texts, images, videos, diagrams) as inscriptions. Smart borders are human-machine configurations that are gleaned from strategic plans for border enforcement and the evaluative assessments made of these border enforcement efforts by various governmental organizations, such as Inspector General and Congressional Research Service reports, as well as corporate design plans for systems. These kinds of materials are key for they scrutinize state practice, reveal bureaucratic mistakes, and produce new truths about the state and its sociotechnical arrangements.⁸

An inquiry into the technopolitics of smart borders beckons us to take stock of the wider situation within which they are found. Smart borders do not have a master user even when mastering others is a political objective. The distributed agencies of smart borders mean we must open the black box and trace the dispersed spatio-temporal elements that constitute them. We must disassemble smart borders to reassemble their distributed character, which leads us to understand how diverse actors, practices, material implements, and ideas maintain the hegemony of borders and of nation states. The contingencies of the political and cultural configurations of smart borders also demand that we understand that they do not subject everyone to the same kinds of scrutiny and control. Instead, populations are differently subjected and smart borders themselves are artefacts and vectors of difference. Technopolitical regimes are the products of asymmetrical relations and critical theories of racial and imperial formations offer ways to interpret the asymmetries that emerge in the practice of recording inscriptions across heterogeneous materials. To examine border matters is to grapple with the contingencies of difference and sociotechnical relations.

Notes

1. Other scholars have also shed light on the material and semiotic dimensions of borders. See, for example: Mezzadra and Nielsen (2013), Dijstelbloem (2021), Schaeffer (2022), Llamas-Rodríguez (2023), and Villa-Nicholas (2023).
2. See for example: Bowker and Star (1999), Ong (2006), Hecht (2014), and Murphy (2017).
3. See for example: Shah (2001), Ngai (2005), Inda (2006), Molina (2006, 2014), Rosas (2012, 2023), Chavez (2013), and Chavez (2021).
4. For “technopolitics” see Hecht (1998 [2009]). For “border technopolitical regimes” see Chaar López (2024).
5. For computers as “reliable and cool” see Time (1965).
6. For more on INS files and the INS Master index see Kessler (1962).
7. This is what Atanasoski and Vora (2019) call the surrogate effect.
8. Stoler (2002, p. 106) makes a similar argument about the significance of colonial commissions.

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