

## Topological imagination, digital determinism and the mobile border paradigm

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**Abstract:** Building on previous insights that have decentered the understanding of borders in a simple, linear manner, there have been recent calls for a paradigmatic change in understanding the role borders play in organizing and regulating contemporary social interaction in space. The main argument focuses on the shift of the role of borders from remote limits controlling access to state territories to central ordering devices at the core of societies both in symbolic and material terms. In this view, borders play vital roles in individuals' lives, reaching deep into the fabric of societies to structure and regulate daily routines as well as long-term strategies. Several developments such as advances in digital technology, globalization-driven mobility imperatives, flow-related security demands, and a topological imagination of space, are converging to shape a new border paradigm that unsettles long established political and economic practices and rises essential questions about power relationships in society in the twenty-first century.

*Keywords:* mobile borders, digital technology, border topologies, border automation

### Introducing the topological imagination

Recent calls for a paradigmatic change in understanding the role borders play in organizing and regulating contemporary social interaction in space (Amilhat-Szary and Giraut 2015, Mezzadra and Nielsen 2013) are centered on the shift in the focus on borders from remote limits controlling access to state territories to central ordering devices at the core of societies both in symbolic and material terms. In this view, borders play vital roles in individuals' lives, reaching deep into the fabric of societies to structure and regulate daily routines as well as long-term strategies. Consequently, they constitute essential tools to examine how contemporary cultural, economic and

political processes impact people's lives in the twenty-first century.

The spatial context of current border transformations can be located at the interface of two major geographical imaginaries that structure how people make sense of and appropriate space. The modern political-territorial organization of the world has been built on a Cartesian view of absolute space as a finite object that can be broken into discrete pieces (Lefebvre 1991; Elden 2007). Some of the most consequential outcomes have been that in practice we have divided the globe in mutually exclusive homogenous territorial units based on linear borders, while conceptually we have become accustomed to relating to space in "here/there" binary terms, thus making it difficult to imagine alternative

geographies of territorial organization (Agnew 1994). With globalization it has become increasingly apparent that the territorial scope of economic, political, and cultural processes overflows the borders of the state, and that these processes are developing their own sets of borders with their own characteristics. On this basis, current approaches conceptualize borders from a polyvalent, relational perspective that acknowledges their multiplicity, co-presence, and context-dependent nature (Axford 2006, Balibar 2004). Such perspective is more in tune with a topological imagination of space defined by flows, hubs, and instantaneous connections that is qualitatively different from the modern notion of topographical space defined by territorial proximity and distance decay (Allen 2010).

Contemporary efforts to enable the coexistence of territorially bounded states with globalization flows have created an apparently paradoxical situation in which state borders are expected to allow uninhibited cross-border flows while at the same time retaining effective territorial protection capabilities. These expectations have resulted in attempts to build a global border regime of selective permeability where borders behave like filters or firewalls, allowing mobility for some but not for others (Walters 2002). From a spatial perspective, the changing geographical imagination has led to a paradigmatic shift of bordering logics, from securing territories to securing flows. To achieve this in practice is to control everything that moves across space. Put differently, movement itself becomes the object of control. Borders now depart from the norms of territorial linearity by becoming

embedded into all kinds of flows that can travel and be monitored uninterruptedly across space (Sassen 2006). The end goal is a border regime of continuous filtration that is believed to reconcile unimpeded mobility and effective territorial security.

## **The twenty-first century border assemblage**

To better grasp the mobile border paradigm and its implications for the way people relate to space it is useful to examine the convergence of several developments that work to shape the current border assemblage underlining the transformation of border geographies. First, there has been a drive to make borders spatially mobile, or portable, by pushing various aspects of control away from the formal state borderlines and into national societies as well as inside other states' territories (Balibar 2004, Walters 2002). The spatiality of these changes has been well summed up in the phrase "borders are everywhere" that underscores the fact that people can encounter and be subjected to borders in various forms in a multitude of locales simply by going about their daily lives (Axford 2006; Rumford 2006).

A second momentous border development consists in the tendency toward the individualization of control to achieve detailed knowledge of flows (Amilhat-Szary and Girault 2015). Borders are routinely embedded into products, from barcoded water bottles and RFID tagged shoes to computer software that protects international copyrights online. More importantly, borders are also being

embedded into human bodies with the help of technologies such as biometrics and RFID (Epstein 2007; van der Ploeg 1999). As the smallest personal space, the body makes an ideal border as it is always at hand, ready to be performed whenever circumstances require. Embodied borders are highly mobile and utterly individual, allowing accurate movement control at the smallest scale (Popescu 2011). Such bordering logic adopts a view that sees the human body as a material object that can be rendered digitally knowable. To this end, people's bodies are routinely screened and vast amounts of data about their daily lives are collected and stored in secret databases on the premise that these bodily data can be used to assign an identity to a person so that they can be classified in terms of good versus bad mobility in order to be granted or denied access to certain spaces.

Third, there is the imperative of border securitization grounded in the recognition that even low-level threats can effectively disrupt the circulation of flows, especially when the embedded nature of these threats make them unmanageable at the traditional border checkpoints. In these circumstances, risk management strategies where potential threats are identified from ubiquitous flow surveillance activities have emerged as key tools in border securitization practices (Amoore 2009). From a broader perspective, border securitization marks a transition from national to human security in the sense that the provision of security has become a much more personal affair that naturalizes the surveillance of daily life (Larrinaga and Doucet 2008). Considering the spatial and temporal multiplication of advanced bordering and pre-screening

procedures, people start crossing borders at the moment they buy a plane ticket online or book a holiday trip overseas from the comfort of their own homes.

Last, few developments have been more consequential to the current paradigm shift than the massive incorporation of digital technology into border making. Central to this process is an understanding of technology as panacea for border efficiency and for securitizing transnational mobility (Amoore 2009; Popescu 2011). With advances in digital technology there is the belief that social life too can be rendered digitally knowable in terms of binary code. Some technological developments are so sophisticated when compared with knowledge available only a few years ago, that often they are surrounded by an aura of superhuman qualities that makes it difficult to understand their socio-technical underpinnings and, thus, easier to be taken for granted as accurate representations of reality. Accordingly, current border governance is heavily influenced by digital technologies such as biometrics, RFID, remote sensing, and algorithmic databases that are assumed to have predictive powers relative to social interaction in space.

### **Border automation and technological determinism**

The mobile border paradigm is molded by the continuous permutations taking place among the components of this assemblage. Mobility, when thought of at the scale of the individual becomes spatially "atomized". To secure the flow is to control each of its components. This

situation represents an exponential increase of uncertainty and unpredictability levels that is too high and too complex to be managed efficiently by humans alone at the stationary one-stop-shop sites such as checkpoints. The main solution has been found in the automation of border functions that is believed to enhance border control capabilities as well as decrease enforcement costs by eliminating human error and increasing reaction speed. From this perspective, portable borders, remote control and biometric technologies, risk assessment strategies, traveller databases, digital documents, surveillance activities, and advanced bordering procedures have to be all synchronized to work together in order to allow for flows to be automatically scrutinized along the entire journey without the need to stop them altogether.

A closer examination reveals that the expectation that automation can by itself provide an appropriate solution for accurate movement control at the smallest spatial scale is unrealistic and shows an erroneous understanding of the relationship between technology and society. Automation, just because it uses the binary code of zeroes and ones, is not bias-free. Instead, algorithms carry with them the cultural stereotypes and the worldviews of the selected few who write them. Every type of technology input into automation introduces more subjectivity by bringing its own representations and shortcomings into the system. These inputs cannot be seamlessly integrated in the border databases. Data collection on peoples' lives becomes a goal in itself, as algorithms generally need large quantities of data in

order to increase the probability of their statistical modeling. Moreover, the secretive nature of the algorithms governing border automation opens them up to erratic change and makes it more difficult to establish decision accountability. Contrary to claims that digital border technologies simply aid human decision-making, the manner in which these are implemented today suggests that automation aims to assume self decision-making capabilities that diminish human involvement in the act of bordering. The end product is a computer-generated decision making that nobody really understands but that everybody has to trust.

The assemblage sustaining the automation of borders is producing topological border spaces, where the relations between border subjects and objects (including the relations between their location in space) are foregrounded over their fixed position in space. This is not to say that borderlines have become obsolete; quite the contrary they are multiplying (Foucher 2007; Jones 2012; Paasi 2009). However, they are doing so in the circumstances in which their functions are embedded themselves in the flows. Such articulation of borders changes the way movement through space is organized and how people and places come into contact. The "portal-like" logic of mobile borders brings people and places together by connecting them directly across space, folding them into each other, unlike modern border territoriality that connects them via contiguous state territories. As a result, the classic inside/outside border-based territorial distinction becomes obsolete here. The spatial "outsiders" are included

in the flow now, albeit with "special" status that allows a more fine-grained control of access to various spaces. In other words, borders are constitutive of mobility in the global era. Without embedded regulatory border functions the flows cannot move unobstructed through space, as it is revealed by practices such as advanced identity checks, forwarded custom operations in companies' warehouses, or color coding passenger and container traffic.

## **Territorializing mobile borders**

Attempts to understand the territoriality of topological border spaces and to cartographically represent them have run into considerable ontological difficulties mainly by opposing networks to territories and territoriality. Their scattered territorial nature as well their geographical mobility has created the illusion that they are disconnected from territory and detached from the rigorous hierarchy of political borders. Often, this nonlinear territoriality has been interpreted as non-territoriality, or "virtuality". To be sure, the network imaginary is very useful to understand the shape or morphology differentiating borderlines from mobile borders. Territory, however, as a political technology used to organize space in order to affect action in it can be seen as an effect of networks (Painter 2010). Put differently, social interaction in space has always been relational – we only have imagined these relations being circumscribed by lines delineating homogenous portions of space a few centuries ago, after advances

in cartography and the advent of rational thinking. With mobile borders the rationale for territory as a mean to appropriate space does not disappear but is transformed from a linear and homogenous concept to a non-linear, topological one. Regulating access to areas, corridors and connecting nodes today appears to take primacy over controlling access to national territories as a whole.

Moving past the spatial imaginary of the network, those of the "portal" and the "flow" are also central in making sense of embedded borders in constant movement. The key here is to think of border flows as spaces and places of themselves instead of thinking of their separate components. For example, on highway and airport networks it is not so much the direction and destination of cars, planes and passengers that is of outmost interest (this can be mapped in Euclidian space) but the fact that these are spaces where the temporal trajectory of "each" becomes a permanent presence of "all" (Creswell 2010). This leads us to the idea of the border as territoriality emerging from the movement/flow. The border can materialize territorially in a particular configuration at one time and under particular circumstances, only to fade off and reappear under another configuration in other instances and circumstances. Another way to reflect on the emergent border is to think how in the pre-digital world bodies had unique locations in space. However, in the digital world of databases the body achieves spatial co-presence, resulting in non-homogenous geographies. The algorithms querying biometric data fragment the body and then recompose it in databases across spaces. Thus, although

a person can be present at a certain border location, the interpretation of its identity might happen half of the world away, and the decision to grant access might be taken to yet another location – all in real time.

## Coda

Making sense of the spatiality of mobile borders is crucial if it is to address the growing disjuncture emerging from the political-territorial organization of the state system and globalization flows. While important, the relational nature of these new border spaces is not their most consequential aspect. Borderlines have always been relationally constituted as well, as Paasi (1996) has remarkably demonstrated by pointing out to the many actors and locations inside the national territory where the national borders are constantly produced and reproduced. What is essential about the new paradigm of mobile borders is the nature of transformations it brings to the organization of space and its centrality to regulating our lives in space. When state sovereignty legal claims of mutual exclusion meet globalization flows the question of whose authority is applying and where becomes of key consequence to social life. In other words, who gets the power to regulate, control and let live when social interaction in space is topological?

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