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Terrain, Politics, History

Abstract

This article is based on the 2019 Dialogues lecture at the Royal Geographical Society. It has four parts. The first discusses my work on territory in relation to recent work by geographers and others on the vertical, the volumetric, the voluminous and the milieu as ways of thinking space in three-dimensions, of a fluid and dynamic earth. Second, it proposes using the concept of terrain to analyse the political materiality of territory. Third, it adds some cautions to this, through thinking about the history of the concept of terrain in geographical thought, which has tended to associate it with either physical or military geography. Finally, it suggests that this work is a way geographers might begin to respond to the challenge recently made by Bruno Latour, where he suggests that “belonging to a territory is the phenomenon most in need of rethinking and careful redescription; learning new ways to inhabit the Earth is our biggest challenge”. Responding to Latour continues this thinking about the relations between territory, Earth, land and ground, and their limits.

Keywords: territory, volume, terrain, geographical thought, politics and geopolitics

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Biography

Stuart Elden is Professor of Political Theory and Geography at the University of Warwick. He is the author of books on territory, Michel Foucault, Martin Heidegger, and Henri Lefebvre. His most recent books are *Shakespearean Territories* (University of Chicago Press 2018); and *Canguilhem* (Polity 2019). He is currently working on books on Foucault in the 1950s and 1960s.

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Terrain, Politics, History

This article is a proposal for and critical assessment of the usefulness of the concept of terrain to analyse the political materiality of territory. Terrain, I suggest, helps us to think about aspects of territory that have perhaps been neglected in previous work. I move through four stages. The first situates my work on territory within a set of debates about the vertical, the volumetric, the voluminous and the milieu as ways of thinking space in three-dimensions, its materiality and a fluid and dynamic earth. Second, building on previous work by myself and others I propose using the concept of terrain to analyse the political materiality of territory, and its complexities. The third part of the article recognises that the concept of terrain has a history in geographical thought, which has tended to associate it with either physical or military geography. I therefore outline some of these histories, and situate the contemporary work in critical relation to them, as well as outlining some possible future directions. Finally, and most briefly, I suggest that this work on terrain, as a shared concern between human and physical geography, allows a geographical response to a challenge recently made by Bruno Latour about territory and the Earth in the new climatic regime. While Latour raises some interesting questions, the discipline of geography has already been doing work that begins to answer them.

A 'Volumetric Turn'?

While my work on territory has found its fullest expression in book form (2009, 2013, 2018), this contribution is a more direct continuation of work in two articles – “Secure the Volume: Vertical Geopolitics and the Depth of Power”, published in *Political Geography* (2013b) and “Legal Terrain: The Political Materiality of Territory”, published in the *London Review of International Law* (2017a). In both those pieces the aim was to think about territory in an explicitly material register. Territory has sometimes been understood as a political form of abstract space, but while that can be helpful in understanding its history, this understanding potentially masks some of the complexities of relations between people, power and place. In “Secure the Volume” I drew on a wide range of literature, showing how work on vertical geopolitics could be linked to work on subterranean geographies to think about political geography more seriously in three dimensions, volume rather than area. This proposal around volume was explicitly indebted to many previous writers.

Stephen Graham was one of the pioneers of attention being paid to the third dimension, as more than just an additional perspective but a full orientation (i.e. Graham 2004), which has been realised in his book *Vertical: The City from Satellites to Bunkers* (2016). Graham’s work, and his collaboration with Lucy Hewitt (2013) was an important early invention. Like Graham, I have also benefitted from the work of Eyal Weizman on the geographies of the Israeli occupation of the West Bank (2007). Peter Adey and colleagues’ work on “vertical security” (Adey 2010; Adey et. al. eds. 2013) was another helpful reference, while Bruce Braun’s 2000 paper on “Producing Vertical Territory” is also important, though often absent from the wider debates.

In my 2013 article ‘volume’ was proposed rather than just the vertical to suggest that what was required was more than simply adding a vertical axis to two horizontal ones. In part this approach was drawing on the architectural work of Claude Parent and Paul Virilio (1996, Virilio 2008 [1975]; see Virilio 1993 [1976]). It was an attempt to think about slopes, angles, texture, matter in motion and other complexities above and below ground. So, tunnels rather than just shafts, trajectories not only height. It also used the idea of the ‘volumetric’, stressing both the capacity and the calculative metric of this way of conceiving space. In this terminology it was building on Jeremy Crampton’s work on cartography (2010), and the term ‘volumetric’ was also one invoked by Graham and Hewitt (2013).

This work on the vertical, volume and the volumetric has been taken up and utilised in a range of productive ways. Some of this research has been historical (i.e. Anthony 2018; Endfield and van Lieshout 2020; Hawkins 2020; Marston 2019; Melo Zurita and Munro 2019), but much has been focused on twentieth century or contemporary political issues. These would include Andrew Harris on “vertical urbanism” (2015), Donald McNeill’s recent work on “volumetric urbanism” in Singapore (2019), Rachael Squire in her work on Gibraltar and US undersea bases in the Cold War (2016a, 2016b, 2017a, 2017b), Katherine Sammler on sea-level rise (2019), Klaus Dodds and Mark Nuttall in work on the materiality of ice and the sea-bed, especially in the Arctic and Antarctic (Dodds and Nuttall 2016; Dodds 2018, 2019; see Bravo 2019), Johanne Bruun in her study of science and politics in Cold War Greenland (2017, 2020), work on vertical structures and surfaces in cities (Mubi Brighenti and Kärrholm eds. 2018), a special issue of *Geopolitics* on Subterranean Geographies edited by Rachael Squire and Klaus Dodds (2020),¹ and in a dizzying sequence of papers produced for two online fora collated by Franck Billé for *Cultural Anthropology* and *Society and Space* (2018, 2019), leading to a significant book-length collection (2020). Harriet Hawkins and Billé have even called this work the “volumetric turn” (Hawkins 2019, p. 4; Billé ed. 2020, ms. p. 5).² It might be responded that geographers have always thought in three-dimensions, but the take-up of these ideas suggests something important is being added in contemporary debates.

Yet while the applications have been widespread, this work has also been criticised for various reasons. Philip Steinberg and Kimberley Peters (2015) suggest ‘voluminous’ rather than ‘volumetric’, pointing to water as an element that escapes some of the static, cubic, ways of thinking, forcing us to consider mobility and flow. Voluminous perhaps captures lived and embodied better than the merely calculative volumetric, though both are important. Steinberg and Peters are resistant to what they describe as a turn to geology in political geography, of layers of time and space, and instead stress the importance of geophysics (2015, pp. 254-55; see Clark 2017; Yusoff 2013; 2017; Bobbette and Donovan eds. 2019). As such, they suggest that work reorienting geopolitics to a politics of the ‘geo’ should not just be of the ‘Earth’, but of “politics in relation to water, ice, subsoil, and the submarine” (2015, p. 255).³ A number of examples of analyses that take that latter approach can be found in a book Steinberg and Peters edited with Elaine Stratford, *Territory*

beyond Terra (2018). These approaches perhaps avoid the problematic layering that Steinberg and Peters identify, instead seeing spaces folded and overlapping, more a patchwork than a tessellation.

Other perspectives have further enriched these debates. Andrew Harris (2015) stresses that we should look at non-militarised as well as militarised spaces from this perspective of its materiality and dimensionality. Peter Adey (2013) and Rachael Squire (2017a) that we need to take the bodies in these spaces more seriously. Kimberley Peters and Jennifer Turner have further developed this idea in thinking about carceral geographies, and what they call a “politics of capacity”, of what fills these volumes (Peters and Turner 2018; see Turner and Peters 2017). Peters and Turner rightly ask that we go beyond merely thinking about volume, and look at “the *qualities or characteristics* that come to define volume” (2018, p. 1050).

Equally Andrea Ballestero has pushed further than just thinking about the horizontal and vertical together, suggesting that such work “also requires troubling the radical separation between above and below the surface because of its tendency to engender a certain fetishizing of subterranean spaces. A richer understanding of how surface and subsurface bleed into each other helps keep in mind that making sense of this continuum is a practice that is distributed between humans and nonhumans” (2019, p. 6). One striking example of is explored by Harriet Hawkins, looking at the case of an island off the coast of Sicily, Ferdinanda, which has been above the waves at times, and below it at others, as a result of seismic activity, raising questions of who has laid claim to it in the past, the present and a possible future (Hawkins 2020).

Elaine Campbell explores different ways of thinking about three-dimensions, suggesting that Weizman’s work on the West Bank is too exceptional to stand as a good model for other places, and looking at extra-urban spaces is also significant (2019). She therefore proposes Michel Foucault’s notion of ‘milieu’ over Peter Sloterdijk’s spheres (1998-2004, 2011, 2014, 2016). Campbell suggests “securitised space is neither horizontal nor vertical, volumetric nor spherical, but is a relational, emergent configuration of different elements which is always-already in-the-making” (2019, p. 18), and concludes that:

From the standpoint of a security milieu, social injustices – such as discrimination, marginalisation, exclusion, over-policing, hyper-surveillance – born of racialized, gendered, classed and ageist spatial practices are traced (and traceable) through a myriad of intersecting political relationalities; just as questions of volume, enclosure, exceptionality, and proximity, cannot be settled in advance of milieu formation, the politics of three-dimensional security emerge through the contingent, creative, dynamic and unpredictable interplay of multiple trajectories of power (Campbell 2019, p. 19).

The notion of milieu she is drawing on is introduced in Foucault’s *Security, Territory, Population* lectures from 1977-78 (2004, 2008). This course is the one in which his famous

'Governmentality' lecture appears. Foucault begins the course with some lectures on town planning and how authorities deal with challenges such as food shortages and disease. These opening lectures are intended to illustrate issues around security, normalisation and the management of population. Administrators, architects and others become regulators of a milieu, a dynamic space of circulation, distribution and relation.

The milieu is an ensemble of natural givens – rivers, marshes, hills – and a set of artificial givens – an agglomeration of individuals, of houses, etcetera. The milieu is a certain number of combined, overall effects bearing on all who live in it. It is an element in which a circular link is produced between effects and causes, since an effect from one point of view will be a cause from another... What one tries to reach through this milieu, is precisely the conjunction of a series of events produced by these individuals, populations, and groups, and quasi natural events which occur around them (2004, pp. 22-23; 2008, p. 21).

Foucault's use of the term therefore captures some of the aspects that contemporary work is trying to address – the combination of natural and artificial aspects (though we might question those terms), and the relation between people and places. However, we need to recognise some of the challenges of using this term. Georges Canguilhem's work on milieu is exemplary in this regard, and Foucault is drawing on his understanding in indicating that milieu comes into biology with Lamarck, following its use by physics beforehand in Newton and the Newtonians. One of the most important pieces in Canguilhem's *Knowledge of Life* is a lecture on "The Living and the Milieu" (2008, Chapter 5; see Elden 2019, Chapter 3). One of Canguilhem's key points is that a milieu is a medium, a mid-point (*mi-lieu*), and it can either refer to an individual being in an environment, a situation or surroundings, or the internal milieu of the regulation of an organism. There are elements of both vitalism and mechanism in the notion which perhaps creates some tensions for how we might think about its use today. Foucault, notably, does not pursue the idea in his own work.⁴

What the notion of milieu does provide, in both Foucault's discussion and Campbell's appropriation, is the interaction of the human with their environment. Indeed, the term for Canguilhem is a translation of the German notion of *Umwelt*, the surrounding or enviroing world. The term milieu is not without its difficulties, and it still does not perhaps capture the specifically material aspects. Milieu also has the potential problem of making the focus the human *in* the environment, and their interaction, rather than the relations between multiple forces, both human and non-human. Nonetheless, while urban work on volume is important, Campbell is surely right to push us to think beyond it. She is also instructive in stressing work that looks at the relation between human bodies and built and physical landscapes. This approach is not to separate the human and the built from the natural and the physical only to look at their interaction, but rather to stress that they are always already intertwined and related in complicated ways.

In the "Secure the Volume" article I therefore proposed a notion of volumetrics to sit alongside more established ways of thinking the politics of metrics, namely geometrics and

biometrics (2013, p. 49). The balance should be continued, rather than stressing one over the other. This is a similar argument to one I made over a decade ago against replacing geopolitics with biopolitics, suggesting that Foucault's stress on population in this same lecture course should not be seen over and above territory as an object of governmentality, but that population and territory were both produced and regulated by a similar set of techniques (Elden 2007). In the development of work on the geographies of volume, Peter Forman recognizes a similar danger:

Yet despite Elden's assertion that multiple calculative techniques may simultaneously play into these security performances, this work has inspired a rapidly growing geopolitical literature on volume and security that currently risks privileging the volumetric as a primary mode of political analysis (Forman 2020, p. 11).

There is an extensive literature on biometrics (i.e. Amoore 2006; Amoore and Hall 2009; Pugliese 2010) and some interest in a sense of geometrics that extends beyond geometry (see Dalby 2013; Elden 2017b and its references). Geometrics and volumetrics, taken with critical work on biometrics, can perhaps be useful in analyzing these relations.⁵

In this understanding, discussions of the vertical, of volume, the volumetric, the voluminous, the sphere and milieu are, despite some differences of topic and approach, are all trying to grapple with the importance of understanding space in its dimensionality and materiality. What I will suggest here is 'terrain' might be a useful way of addressing those concerns, as a particular approach to political space and particularly territory.

The Question of Terrain

In a 2010 paper which was a first draft of the introduction to *The Birth of Territory* (Elden 2010a, 2013), the notion of 'terrain' was used as a shorthand for what I called a political-strategic understanding of territory. The point was that while a political-strategic sense of terrain was certainly one way to think about territory, and so too was a political-economic sense of land, neither alone nor in combination were they sufficient to grasp the complexity of territory. The argument was that we should not collapse territory simply into the question of land, property and rent, on the one hand, and terrain, conflict and struggle on the other.

The article suggested that we should also think about territory in relation to political-legal questions – where does the law apply, where does it cease to apply, and what kind of law is operable – and political-technical ones, including practices like surveying, measuring, cartography and navigation. When I suggested, following Foucault's term, that territory was a political technology, or bundle of political technologies, I intended the technological to be understood as more than merely the technical, but more in the sense of *techne*, an art or practice. Thinking territory as a political technology was a way of trying to capture the multiple ways in which territory is produced and reproduced, a process rather than an outcome, with the arts or practices including laws and administration. This approach was

employed in both political work on territory in the 'war on terror' and in tracing a history of the concept of territory (2009; 2013).

In more recent work I have further developed that already expansive schema in understanding the complexities of territory. I still think that these four registers – political-economic, strategic, legal and technical – are really important. But we should go still further. This development of my approach has been in dialogue with others, in part in relation to critiques, but also with those pursuing their own lines of inquiry. It means taking some account of colonial questions in relation to territory (see Halvorsen 2018), to take the body more seriously, and the physical nature of the landscape, the places over which, through which, territories are established and contested. Some of this theorisation is developed in my most recent book on territory, *Shakespearean Territories* (2018). While this is a book about how territory features in Shakespeare's plays, I also use Shakespeare to develop the theorisation of territory. In the material register, for example, I explore Shakespeare's interest in technologies such as land-surveying, cartography and the military. I also discuss the scene in *Henry IV, Part I* in which rebels against the King discuss dividing the kingdom along the lines of rivers, only for one to complain that the river goes in an unfair direction, and to propose having its course changed.

More needs to be done of course in these different registers. But in trying to better account for the physical materiality of territory, I have also gone further in thinking about previously explored issues. One aspect has been the question of land, in relation to Henri Lefebvre especially, whose writings on rural political economy and sociology are an important part of his work, but relatively neglected in Anglophone studies (see Elden 2004, Chapter 4). A forthcoming collection of his work on rural questions, which span economy, sociology and geography, edited with Adam David Morton, will situate and introduce his work on this theme (Lefebvre, forthcoming). Lefebvre is best known as an urbanist and theorist, but his doctoral thesis was on peasant communities in the Pyrenees, and he entered the Centre National de Recherche Scientifique after World War II as a researcher on rural issues. It was research on this theme that led Lefebvre to urban concerns, through the observation of the dual process of industrialisation and urbanisation in his home region. Lefebvre wrote a book on the Pyrenees (1965), published his secondary thesis on a Pyrenean valley (1963) and his primary thesis on rural sociology has recently been published (2014). There are also a sequence of papers on this theme in his book *From the Rural to the Urban* (1970). In his examinations of rural sociology and political economy, Lefebvre shows that land is much more than merely an economic concern (see, initially, Lefebvre 2016; Elden and Morton 2016).

This rethinking of land has also come in some recent PhD research. Mara Duer's work on contemporary struggles between the Mapuche people in Chile and the state and agribusiness, shows how these were struggles over the idea of 'land' as well as the use made of it (2017). Leo Steeds shows how there is a specific moment in the history of political-economic thought in which the richness of land as a category and practice becomes

reduced merely to a question of rent (2019). In other words, the impoverished understanding of land is historically produced, not essential. More generally, Nicholas Blomley (2016, 2019) and Henry Jones (2019) have both suggested that the colonial and legal aspects of land need to be more fully examined, and that the question of property is crucial (on land ownership see Linklater 2013 and Christophers 2018). Tania Li has done some very valuable work exploring this question (2014a, 2014b), as have a number of other anthropologists and political scientists including Timothy Mitchell, James Scott, Gastón Gordillo, and Donald Moore (i.e. Mitchell 2002; Scott 2009; Gordillo 2014, Moore 2005).

Terrain can also be a means of approaching the physical landscape. The work of the ICE-LAW project run by Phil Steinberg at IBRU: Durham's Centre for Borders Research, which involved discussions with geographers, architects, lawyers and others has helped to show the importance of the physical nature of territory. The ICE-LAW project pushed theorisations of territory beyond static, dry land, and required thinking about the complexities of indeterminate and changing environments.⁶ Together this work has suggested how the question goes beyond a sense of the political-strategic, but also the geophysical aspects of terrain. This work on terrain has also been in dialogue with Gastón Gordillo, who makes the suggestion that terrain is "the only spatial category that (in contrast to place, territory, or landscape) evokes material forms, volumes and textures that are not reducible to human control and appropriations" (2019). Thus while territory is shaped and made by human actions, the landscapes which those actions inherit, divide, command, and transform cannot be seen as entirely under their control.

The way that these issues can work outside of human agency will be returned to below, but it is important to note that the relation of the geophysical and the geopolitical can also be exploited. One example would be the way that the US-Mexico border does not just make use of human-built infrastructure such as the wall or fences, but also the physical landscape of the desert, rivers and mountains as itself part of the barrier. For the group No More Deaths, the USA uses the desert as a "weapon".⁷ By closing off main crossing points, or concentrating more prevention in those areas, they channel migration through ever more dangerous terrain. This is not a new challenge, exclusive to the Trump or Obama administrations. Bill Clinton's Prevention Through Deterrence strategy established this back in the 1990s,⁸ though there are unquestionably further challenges today with Immigration and Customs Enforcement agency (ICE; see Uhlmann 2019)

Of course, this terrain also provides a challenge to any fortification that might be built. In 1979 the United States Geological Survey made a series of 1:25,000 scale infrared aerial photographs of the entire length of the boundary; a sequence of images which have now been digitised by the Library of Congress.⁹ In 2016 Josh Begley made a film which showed the physical nature of the boundary, entitled "Best of Luck with the Wall", demonstrating the challenges of the terrain along the 1,954 miles of the line. As Begley describes it: "By focusing on the physical landscape, I hope viewers might gain a sense of the enormity of it all, and perhaps imagine what it would mean to be a political subject of that terrain".¹⁰ The

ongoing fortification of the border is transforming the landscape through clearance, bulldozing and building work, but this is a far from straight-forward or uncontested process.

These ideas have been developed in Geoffrey Boyce's study of the "dynamic materiality" of the US/Mexico frontier (2016). In that work he calls for a "post-humanist theory of 'terrain' - one that would account for those 'conditions, forces and intensities' that at any given time 'accumulate to affect, disrupt, and frustrate state practice', independent of any human mediation" (2018, p. 351, citing 2016, p. 253; see Longo 2018; Vicki Squire 2014a, 2015). He builds on the work of Gordillo as well as my own, but takes this approach further through his rich empirical study of the frontier. He recognises that earlier work grappled with related issues concerning "territorial integration, administration and control", but suggests that "what is novel in the re-conceptualization of terrain suggested here is its appreciation for – and methodological concern with – the dynamic multiplicity of the non-human world, and the capacity this holds to actively disrupt, withdraw from or deterritorialize established relations of power. This opens up important questions for geographies of surveillance, policing, and military practice" (2016, p. 254). Boyce also draws on James Scott's *The Art of Not Being Governed* (2009), which suggests that terrain provides a "friction" to human agency and state practice, rather than an absolute barrier, a theme which has been taken up by John Protevi in his recent short book *Edges of the State* (Protevi 2019; see also Scott 2017; Hawkins 2020).

The relation of the built to the landscape in the USA's southern border is similar to the way the Mediterranean is utilised by Frontex as Europe's southern border. As Nick Vaughan-Williams argues, "the exposure of 'irregular' migrants to life-threatening conditions arising from the hostility of environments in which they are abandoned is intrinsic to the operation of the sovereign ban: the active use of these environments forms part of a broader biopolitical strategy of governance that attempts to police unwanted populations and render them immobile" (2015, p. 66). As he continues: "the very materiality of the Mediterranean and Aegean seas and their potentialities for shaping regimes of (im)mobility can be read as forming part of a wider assemblage of human and non-human forces that play a fundamental role in the contemporary performance and reproduction of Europe's borders" (2015, p. 66; see Kovras and Robins 2015; Bialasiewicz 2012). The political materiality of borders has also been the focus of some important recent work from anthropology (Demetriou and Dimova eds. 2019).¹¹

There is also the physical production of territory, with striking examples of states using sand, concrete and other materials to build islands and extend the boundaries of the state through large scale infrastructure projects. Striking examples can be found around Singapore (Comaroff 2015), Macau and Dubai. A recent example is in Hong Kong, which is building one of world's largest artificial islands.¹² Even more politically charged are the artificial islands being built in the South China Sea, where a foothold of land territory can give strategic, if not always legal, control of the surrounding water.

But these kinds of transformations of territory, and the interrelation of the geopolitical and the geophysical do not just happen at the boundaries of states. States and other actors have long transformed their territory, whether it be damming rivers for reservoirs or power generation, draining swamps for building work or agriculture, which may also require irrigation, building transport infrastructure such as roads, railways, canals and air and sea ports, tunnels and bridges, extraction of resources, regeneration of brownfield sites or rewilding. Landscape architecture has long analysed these kinds of transformations (Morrish 1996; Sanjuán ed. 2019).

Chandra Mukerji's work is exemplary in discussing of these themes, both in *Territorial Ambitions and the Garden of Versailles* and *Impossible Engineering: Technology and Territoriality on the Canal du Midi* (1997, 2009). Other important studies include Olivier Razac's work on the transformation of landscapes with barbed wire (2009), Andrew Barry's work on the Caucasus pipeline (2013), and Mark Usher's work on drainage infrastructure and governmentality in Singapore, what he calls the "conduct of conduits" (2019). As Thomas Sigler describes it, this is the 'territorial palimpsest' (2014, p. 897), spaces that are made and remade by human agency and physical processes. Territory is continually remade by a range of practices, not just bordering and fortification at the divides between states, lines that were themselves the product of conquest or loss at some historical moment, but also through surveying, mapping, engineering, logistics, operations and other political technologies.

Thinking about the malleability of terrain can be done through a number of examples of how the physical and the political landscape interrelate. Sometimes this concerns the moving of border lines, where a political-legal line on the landscape did not coincide with physical features of that landscape. The movement of rivers in a landscape can create these kinds of problems, whether as a result of dredging works as in a recent Belgium-Holland case, or through more natural processes. Similarly, coastlines change as a result of erosion, sea-level rise and reclamation projects, glaciers and sea-ice can melt, deserts can shrink and grow, and marshes and deltas equally blur any straightforward distinction between land and sea. While the old idea of 'natural boundaries' has long been discredited, most boundaries do use at least some features of the landscape – rivers, coastlines, mountains, deserts – and sometimes etch their legal-political line onto the physical terrain. There may be nothing natural about boundaries, but there are a number of intersections of nature and boundaries (see Fall 2005, 2010). If the geophysical landscape is increasingly malleable, then this malleability complicates the ways in which states might fix their boundaries that mark the edges of their territories. They can also feature in terms of the internal aspects of the territory of states, rather than just at their borders. These issues operate above and below the surface, both the sub-soil and the sub-marine, requiring a three-dimensional study, and do not operate on a fixed land-sea distinction. Physical processes, often sped up by the climate change caused by global warming, are transforming territory.

It is obvious to say that rivers meander, that glaciers melt, mountains erode, coastlines change, that islands can be submerged, that deserts can shrink and grow, that deltas, swamps and marshes complicate a simple land/sea divide. And yet, so many of our theorisations of political-legal territory mask these factors. One indication of the changing nature of this question is that the Intergovernmental Panel on Climate Change (IPCC) has recognized the “risks to territorial integrity” that are likely to result from climate change (Field et al., eds. 2014, pp. 20, 73, 758, 775). On glaciers in this regard, we now have an in-depth study of the Italian-Austrian boundary line, which follows a watershed, and is now reconceptualised legally as a moving border. This is the work of the Italian Limes project (Ferrari, Pasqual and Bagnato 2019).

The concept of ‘terrain’ can therefore encompass many of the concerns for which notions from volume, volumetric, voluminous, sphere, milieu, to materiality were proposed. Terrain is obviously material, and it takes into account depth and height as well as the flattened cartographic imagination; volume not just area. It also avoids some of the vitalist associations of the notion of milieu, but nevertheless helps us to think about the relation of the built and geophysical environment, of the transformations states and other actors make to their territories, even as they are constrained by them. Although terrain has an established sense in geography, which the next section of this article will discuss, it has the potential to move beyond simply being dry land, and to understand the relation of land to water in indeterminate and dynamic environments – of which examples would include rivers, deltas, estuaries, swamps and marshes, glaciers, and sea ice. This extension to use the notion of terrain to think about water as well as land might be seen by some as problematic, but terrain can, in this expansive sense, perhaps begin to challenge the material divisions that structure the legal-political regimes of land, sea and airspace. Perhaps most usefully, terrain is helpful because it combines at least two fundamental registers – the material and the strategic, the physical and political dimensions of geography.

It is for all these reasons that I suggest that terrain is the best concept we have for understanding the political materiality of territory. This materiality is not a static product of some previous process, nor is it some material element to which processes happen. Rather, terrain is itself a process, continually made and remade, transformed by geophysical and human transformations. Terrain therefore acts a supplement to theorisations of territory; it forces them to account better for the physical, material nature of the spaces to which human actors lay claim, which they live in and shape.

The legacy of terrain in military and physical geography

There are certainly some problems with the use of ‘terrain’ to capture this way of thinking about the political materiality of territory. As we know, terrain as a category has traditionally been associated with physical geography as well as military geography. There are some associations with both of those approaches which are problematic to this kind of way of thinking about terrain.

The Prussian General Carl von Clausewitz analysed terrain in relation to the military in his famous book *On War* of 1832. He suggested that “Geography and ground [*Gegend und Boden*] can affect military operations in three ways: as an obstacle to the approach, as an impediment to visibility, and as cover from fire. All other properties can be traced back to these three” (Book 5 Chapter 17, 1984, p. 348).¹³ He notes that his discussion is of “the full meaning of the French term *terrain*”, and at times uses *Terrain* as a German word, though the section is entitled “*Gegend und Boden*” – country, region or area; ground or soil. Movement, visibility and cover are the key here. Traditionally then, military geography has looked at the way that the landscape might be utilised by or limit military operations – troop movements, strategic command of height, artillery use, supply lines and so on. Napoleon Bonaparte was the first general to take geologists on a military campaign, though they were not used on the battlefield itself until World War I (Rose, Ehlen and Lawrence 2019, pp. 2, 5).

There are many useful studies of this understanding of terrain (i.e. Winters 1998; Rose and Nathanail eds. 2000; Doyle and Bennett eds. 2000; Rose, Ehlen and Lawrence eds. 2019). That geography is, first of all, about waging war is something claimed by Yves Lacoste back in 1976, a claim Paul Virilio and others have continued to make (see Woodward 2005, p. 730). Geography grew up in “the shadow of the military” (*Hérodote* interviewers in Foucault 2007, p. 177). Nonetheless, contemporary political geography on territory – and I include my own earlier work here – has tended to underemphasise the physical materiality of the terrain divided between political-legal regimes. This neglect of the materiality is a problem in general terms, but especially when we consider the dynamic processes exacerbated by global warming.

Rachel Woodward importantly reversed that traditional focus of military geography (2004, 2005). Critical of the “terrain and tactics” approach, Woodward instead looks at military landscapes (i.e. 2013). Instead of asking what was the impact of the geography on the military, Woodward asks what was the impact of the military on the geography? How do airfields, dockyards, bases, barracks, firing ranges, armament factories, communication and surveillance posts, memorials and other uses of landscape transform it, and the surrounding area? How does the military legitimate this land use and transformation? What implications does this have for the local area in terms of employment, schools, prostitution, clashes with the civilian population and so on. Her work and associated studies have done much to set a new agenda for work in this area, a genuinely critical military geography (Woodward 2017). Similarly, Shiloh Krupar’s work on military and nuclear toxic waste and its impact on the landscape of the US southwest is extremely helpful in approaching the legacies of military use of landscape (2013).

But is the problem with military geography *just* that it made the first move, to analyse the impact of geography on the military, but not the second, the impact of the military on geography? What if it also worked on a limited notion of terrain? And that, while certainly reductive in understanding the relation between the military and geography, terrain is

actually an underexamined notion within geography? As I will go on to suggest, it is actually a concept that is more mobilized than analysed, and not always in helpful ways.

More recently though, work on mobilities and historical geography has been used to rethink some of the assumptions of military geography (see Rech et. al. 2015; Merriman and Peters 2017; Merriman et. al. 2017; Forsyth 2019). In this I would include Isla Forsyth's work on deserts and camouflage (2014, 2017), Derek Gregory's analysis of "The Natures of War" and Pip Thornton and Gastón Gordillo's work on the battlefield (Gregory 2016; Thornton 2015; Gordillo 2018). Gordillo excepted, not all of these use the language of terrain, but I would suggest they can all be seen to be grappling with the question of the interaction of the material landscape with military action.

Additionally, the military has not just had an impact on the landscape, but also on what we know of that landscape. Technical work is crucial, including the work in surveying that made possible national mapping projects. Rachel Hewitt's biography of the Ordnance Survey (2010) is revealing, because it shows how much this project was bound up with the needs of the military, a theme also developed in Caren Kaplan's *Aerial Aftermaths*, which explores how landscapes get turned into cartographic representations, from Scotland to Iraq (2018, Chapters 1 and 4), and the more general study of the impact of cartography on territory by William Rankin (2016). In more recent developments, there is some excellent work by Jennifer Gabrys on modern technologies of remote sensing (2016), by Jess Bier on the relation between military occupation and cartographic knowledge in Israel/Palestine (2017), by Matthew Wilson on GIS, of course a technology developed by the military but also used to study urban inequality (2017), and Antoine Bosquet on military perception from the telescope to the drone (2018).

In physical geography, terrain has tended to be understood in terms of a specific layer above the earth's deeper rock. Terrain is related to relief, generally understood in terms of elevation, slope and orientation of features. Terrain then is usually seen in terms of land form, which then has an impact on water flow and distribution on and through that surface. There is also generally a distinction between topography and bathymetry for land under air and land under water (though see Childs 2020; Forman 2020). Both these definitional issues therefore rest on a strict distinction between land and water. Nonetheless, it is important to recognise the importance of water to any boundary that uses a natural feature – rivers and coastlines of course, but watershed lines or glaciers in mountains, and the absence of water or its relative lack in desert regions.

Geomorphology studies the formation of terrain, whether this is through seismic activity, erosion by water or wind, or external forces such as meteorites. These land processes can shape terrain. The word 'geomorphology' was apparently first used by Albrecht Penck in the early twentieth century for the study of this process of formation (Martin 2005, p. 178), though the work of James Hutton and Charles Lyell in the late eighteenth and early nineteenth century is a more crucial beginning (Goudie 2011, p. 23). Understanding terrain

might be important for human settlement, agriculture, transportation or military activities, and meteorology.¹⁴

A larger question is how the notion of terrain became a relatively unproblematic notion. How did physical geography come to take terrain as land form, rather than land processes? As the work of Martin Rudwick has shown (i.e. 2005, 2014), the deep history of the earth shows a dynamic planet.¹⁵ Perhaps it is not simply problematic that the idea that terrain is land form, to which process happens, but that the distinction between form and process is itself problematic. What would happen if we collapsed this distinction?

Terrain analysis is a familiar notion, understood as the evaluation or analysis of terrain (Mitchell 1991; Wilson and Gallant 2000). But what if we began with an analysis of terrain, as a concept and practice. Then, if we have clarity about the notion of terrain, how might we make terrain analysis a mode of critical engagement, a way of looking at territory or political geography more generally, that does not just see terrain as the object of scientific analysis, but a concept with which we might do critical analysis. To explore this fully, we would need to step back and undertake some historical work. How could we discuss the history of terrain as a *concept*, especially in relation to physical geography? Why has terrain been reduced to the inert (as opposed to the dynamic), and to the dry – land as opposed to water? Such questions are beyond the scope of a single article, but perhaps indicate some potential future lines of inquiry.

There are some very good histories of geomorphology, from Michael Church's survey (2010) to Rachael Tily's largely unpublished doctoral research employing approaches from Science and Technology Studies (2017, 2019).¹⁶ However, there does not appear to be an account which analyses why terrain became the term used to designate land form, and when it got distinguished from land process.¹⁷ A clue might be in Church's discussion of the shift from geomorphology in the nineteenth century as the historical interpretation of landscape to the understanding of the processes by which landscapes are modified in the latter half of the twentieth century.

In geomorphology and, indeed, in much of earth science, the nineteenth century ended in about 1950. Up until the time of the second world war, the major questions remained the historical ones and the methods of investigation remained largely the same. The change, when it came, was in substantial measure technology driven. Airborne and seaborne surveying instruments, many initially developed for the purposes of war, gave major impetus to geophysical exploration, making available information about Earth's surface and shallow subsurface never before accessible. On land, the global extension of modern topographic mapping, the increasing availability of aerial photography and rapidly developing access to much of the terrestrial surface all facilitated geomorphological work (Church 2010, p. 266).

The model for this kind of historical work could be Stefanos Geroulanos and Todd Meyers's remarkable book *The Human Body in the Age of Catastrophe* (2018). That book looks at the

First World War, and shows how various medical, psychological and social developments can be related to experiences of psychological trauma, brain and bodily injury and shock. Many of the key figures in mid-century medical sciences had formative experiences in that war. In a similar way, we might ask how did the Second World War, with military advances in terrain analysis, and the civilian use of military technologies of surveying, photography, and other instrumentation, together with the advent of the nuclear age,¹⁸ feed developments in understanding land form and process? These developments continued into the Cold War, both for the conflict itself, and the associated space race (see Pike, Evans and Hengl 2009, p. 19). This question of terrain then is an important way that military and physical geography interrelate, rather than simply that both subdisciplines use the term.¹⁹ Further work on the question of terrain, both in the contemporary moment but also in the history of the discipline, may be helpful.

A Response to Bruno Latour

On 12th June 2019, Bruno Latour tweeted: “Yes, geography always had a physical & a human side (with many disputes in between); so had physical & social anthropology (with even more acrimonious conflicts), but until the Anthropocene, sociology had been left with no ‘physical’ sociology. “Things” are back...”²⁰ While a tweet may seem ephemeral and inappropriate for academic engagement, the claim builds on some of Latour’s work in the past several years, which has been to explore what he calls ‘Gaia-politics’, or sometimes geopolitics, a politics of the earth.²¹ The work, which could be traced back at least as far as his *Politics of Nature* (2004), and runs through a sequence of recent articles (i.e. 2014, 2016), finds its fullest expression in the book that developed from his Gifford Lectures at the University of Edinburgh, *Facing Gaia* (2017b).

Latour is hardly alone In discussing the nonhuman agency of the earth, and elsewhere I have discussed some other interesting work thinking about these questions, by writers such as Karen Barad, Jane Bennett, and Elizabeth Grosz (Barad 2007, Bennett 2010; Grosz i.e 2008; see Elden 2017a, 2017b). Yet Latour is one of the most significant social theorists writing today, and his most recent book *Down to Earth* does raise questions that are worthy of a geographical response.

Latour suggests that “belonging to a territory is the phenomenon most in need of rethinking and careful redescription; learning new ways to inhabit the Earth is our biggest challenge. Bringing us down to earth is the task of politics today” (Latour 2018, back cover). But ‘down to earth’ is a weak translation of the book’s original title *Où atterrir?* which is closer to ‘where to land?’ Indeed, Latour does give an example of a plane looking for a place to land earlier in the book. He gives the example of Captain Sully as a heroic rescuer of a plane whose original and emergency landing strips are unavailable (though this is a somewhat problematic reference to a saviour figure). In a related vein in our current predicament, we need in Latour’s terms to find a way to bring us down to earth, of where to land or ground ourselves, coming back to earth. As Latour says in the book “To land is necessarily to land

somewhere [*Atterrir, c'est forcément atterrir quelque part*]” (Latour 2017a, p. 126; 2018, p. 99).

The site of such a landing is the core of the book. He rejects other possible terms – Earth [*Terre*], Nature, Gaia, Land [*Sol*] and World – and settles on the Terrestrial [*le Terrestre*], for now, “with a capital T to emphasize that we are referring to a concept, and even specifying in advance where we are headed: the Terrestrial as a new *political actor*” (Latour 2017a, pp. 55-56; 2018, p. 40). Part of Latour’s point is that this is indeed an actor, not an inert container or framework:

The massive events that we need to sum up and absorb in fact concerns the power to act of this Terrestrial, which is no longer the milieu [*décor*] or the background [*l'arrière-scène*] of human action.

People generally talk about geopolitics as if the prefix ‘geo’ merely designated the *framework* [*le cadre*] in which political action occurs. Yet what is changing is that, henceforth, ‘geo’ designates an *agent* that participates fully in public life (Latour 2017a, pp. 56-57; 2018, p. 41).

That claim is of course, not new to geographers. It has been there in the understanding of geography for a long time, and it is a claim many people have been making about geopolitics over the past few years (Clark 2011, 2017; Bobbette and Donovan eds. 2019; Yusoff 2013, 2017, 2018). As a small part of that argument, my work has been trying to argue more substantially for thinking about territory as a process rather than a product, as actively shaped and shaping rather than an inert container.

But Latour is pushing us further here. He is suggesting that the distinction between physical and human geography might need to be put into question. If previously they were seen “as if it were a matter of two layers, one superimposed upon the other” (Latour 2017a, p. 57; 2018, p. 41), he now suggests this may need to be rethought.

As long as the earth seemed stable, we could speak of *space* and locate ourselves within that space and on a portion of territory that we claimed to occupy. But how are we to act if the territory itself begins to participate in history, to fight back, in short, to concern itself with us [–how do we occupy a land if it is this land itself that is occupying us?] The expression ‘I belong to a territory’ has changed meaning: it now designates the agency that possesses the possessor!... It seems that we are landing in the thick of *geohistory* (Latour 2017a, pp. 57-58; 2018, pp. 41-42).²²

Latour says that “It is unlikely that this territory will coincide with a classic spatial, legal, administrative, or geographic entity [*unité*]. On the contrary, the configurations will traverse all scales of space and time” (Latour 2017a, p. 120; 2018, p. 95). Somewhat strangely, one of Latour’s key references for thinking about these questions is Carl Schmitt (2017b, Seventh Lecture), a repulsive figure whose understanding of geography in *The Nomos of the Earth* was informed by Friedrich Ratzel and Halford Mackinder, as well as his own earlier advocacy

of an expansionist Nazi geopolitics (see Elden 2010b; Legg ed. 2011; Minca and Rowan 2016).

Despite his occasional references to more contemporary geography, Latour is clear that his understanding of territory is not that of the tradition. Territory for him has commonly been “too limited to the simple administrative grid [*quadrillage*] of a state” (Latour 2017a, p. 111; 2018, p. 87). This is of course far too simple a definition of state territory. So, the question arises: does Latour rest on a relatively straight-forward understanding of territory, that we now need to go beyond? The older sense of a geographically bounded area has not been entirely superseded, though it is certainly under unprecedented threats, and many powerful states are doing all they can to protect it. But perhaps more importantly, the question of climate change is bearing on such bounded geographies.

Were we to give ourselves at last a realistic vision of our belongings, we would need a geography that we lack, a geography of the discontinuous and overlapping territories – something like a geological map with a three-dimensional view, its multiple layers embedded in one another, its dislocations, its breaks, its sinuous movements, all the complexity that geologists have been able to master for the long history of soils and rocks, but of which geopolitics unfortunately remains deprived (2017b, p. 276).

How much this is true of geography in general, and geopolitics in particular, is certainly open to question. But work on the notion of terrain is, I hope, a way in which geographers might begin to respond to the challenge made by Bruno Latour. In part – and here I am offering a provocation, or making a request – it might be where physical and human geography can work together to think about a shared issue.

In conclusion, what I am suggesting is that terrain has the potential to be a more material way of thinking about territory, or more generally earth, land and ground, and their limits. Territory has sometimes been detached from that materiality, and taking terrain into account helps to address this absence. Nonetheless, some of the ways that terrain has been understood previously do not fully address this concern, or have difficulties of their own. Can we find a way to develop an understanding of terrain which takes its own materiality seriously, and to see that as formed and reformed *as* a dynamic process, rather than *by* processes? As with the work on the notion of volume, and my earlier work on terrain, much of this thinking has already been done by others. There are multiple resources in literature from a range of fields and subfields, much of which I have tried to indicate in this article. My challenge to geography – both human and physical geography – is that we should continue that work; my attempt at a contribution is to try to make some of those initial connections.

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Notes

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- ¹ The issue includes Endfield and van Lieshout 2020; Barry and Gambino 2020; Forman 2020; Bruun 2020; Childs 2020; Hawkins 2020;, among others.
- ² See also Billé <https://culanth.org/fieldsights/introduction-speaking-volumes> and <https://www.societyandspace.org/articles/volumetric-sovereignty-part-1->

[cartography-vs-volumes](#) Some of the challenges of this way of thinking are also explored in Derek McCormack’s analysis of atmospheres (2018, Chapter 5); and Louise Amoore’s work on cloud geographies (2018; 2020).

3 The quotation is from an unpublished lecture in 2013.

4 On the problems of vitalism, see also Klinke 2019. Some contemporary work on ecology, not using the notion of milieu, might be a better model (i.e. Kirksey 2015).
5 Unfortunately, the notion of ‘human terrain’, which might otherwise be helpful, was notoriously appropriated by the US military, and has its own severe complications (Elden 2017a, p. 203 and references).

6 See the project website archived at <http://icelawproject.weebly.com>

7 <https://www.theguardian.com/us-news/2016/dec/07/report-us-border-patrol-desert-weapon-immigrants-mexico>; No More Deaths,

<http://forms.nomoredeaths.org/en/>

8 <https://www.theguardian.com/commentisfree/2018/dec/29/the-us-government-deliberately-made-the-desert-deadly-for-migrants>

9 The entire sequence can be found at <https://www.loc.gov/item/87691867/>

10 It can be viewed at <https://theintercept.com/2016/10/18/best-of-luck-with-the-wall/>

11 On the challenges of the ‘new materialism’ for International Relations see Vicki Squire 2014b, Lundborg and Vaughan-Williams 2015. In Geography work is widespread and defies indicative references, but see Dittmer 2017.

12 <https://www.theguardian.com/world/2019/mar/20/hong-kong-to-build-one-of-worlds-largest-artificial-islands>

13 The German text can be found online, for example at <https://www.clausewitz-gesellschaft.de/wp-content/uploads/2014/12/VomKriege-ebook.pdf>

14 A helpful (though technical) guide to approaches and literature is Minár and Evans 2008.

15 For a glimpse of the future, Zalasiewicz 2008; for a social reading of these issues see Clark 2011.

16 There are also some good account of philosophy and the earth sciences (i.e. Frodeman 2003; Protevi 2013), and in environmental philosophy (i.e. Macauley 2010), as well as a physical geography study of its philosophy (Inkpen 2005). See also Martin 2005; Goudie 2011.

17 Much valuable historical work has been done in the four volumes of *The History of the Study of Landforms or the Development of Geomorphology* (Chorley et. al. 1964, 1973, 1991, Burt et. al. eds 2009).

18 Church 2010, p. 282 n. 1 indicates the importance of the “development of the uranium-lead radioisotopic method began at the turn of the twentieth century with the discovery of radioactivity, but was still under development until after mid-century”.

19 Contemporary developments are pursuing an ever-more quantitative approach, the notion of geomorphometry. For a guide, see Pike 1995; Pike, Evans and Hengl 2009.

20 <https://twitter.com/brunolatouraime/status/1138814408178774018?s=11>

21 For a summary and discussion of Latour’s project, see Conway 2016, and the replies by Clark 2016 and Dalby 2016.

22 The phrase in brackets is not in the French. On geohistory, Latour references Chakrabarty 2002 and in 2017b, 39 n. 73, Chakrabarty 2014.