Territory–network

Joe Painter
Department of Geography, Durham University
Durham, DH1 3LE, United Kingdom
j.m.painter@durham.ac.uk

Paper presented to the
Annual Meeting of the Association of American Geographers
Chicago, March 2006

Published in Italian as:
Painter, J. (2009) 'Territorio/rete'. In: dell'Agnese, E. (ed) *Geo-grafia: strumenti e parole*. Milan: Edizioni Unicopli, pp. 137-163.

Abridged version published in French as:
Painter, J. (2009) 'Territoire et réseau: une fausse dichotomie?' In: Vanier, M. (ed) *Territoires, territorialité, territorialisation: controverses et perspectives*. Rennes: Presses Universitaires de Rennes, pp. 57-66.

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Abstract

This paper considers the changing relationship between the concepts of network and territory in geographical scholarship. It begins by summarizing how a range of spatial terms have been re-conceptualized as part of the 'relational turn' in geographical theory. It then considers the relative neglect of the notion of territory in this movement. After a brief outline of the contested etymology of territory and its principal uses within geography, the paper take a series of cuts through geographers' changing understandings of the relationship between territory and network. Finally it suggests several ways that the two perspectives might be reconciled, each involving a different conception of network and different implications for geographical research.

Key words

Territory, network, geographical thought, boundaries, spatial theory

Introduction

'Territory' and 'network' seem to come from different, even incompatible spatial discourses. 'Territory' evokes boundaries that parcel the world into a patchwork of two dimensional shapes with internal integrity and distinct identities. Networks stretch out over space, drawing the far away near. Networks involve connection, flux and mobility; they mix things up and form hybrid identities. A complex network seems to work in three, four or more dimensions. Where networks seem dynamic, territories appear static and resistant to change. This is exaggerated, of course, and there are many more subtle versions of both concepts. Nevertheless, even in more nuanced

accounts network discourses and territory discourses involve distinct logics that cannot easily accommodate each other.

This apparent incommensurability matters because of the hold both ideas have over contemporary spatial theory. The growth of network theorising has been a notable trend in recent geographical scholarship. At the same time geographers have, rightly, been first to question the claims of some cheerleaders for globalization that we are on the threshold of a borderless world. And after the declaration by the United States government of a 'war on terror', national borders, defence of territory, and resistance to hybridity and mobility are defining features of the political present and foreseeable future.

How then can we reconcile these apparently competing perspectives? Do we need to? And is it possible? Much depends on how 'network' and 'territory' are understood—they are far from simple terms, of course. However, the complexity of the two discourses need not prevent a serious response to Valérie November who wondered recently 'whether the concepts of network and territory can be linked together, or if they correspond to two different explanatory systems'[1] (November 2002: pp?).

I want to address November's question by considering the changing relationship between the concepts of network and territory in geography. I begin by summarizing how a range of spatial terms have been re-conceptualized as part of the 'relational turn' in geographical theory. I then consider the relative neglect of the notion of territory in this movement. After a brief outline of the contested etymology of territory and its principal uses within geography, I take a series of cuts through geographers' changing understandings of the relationship between territory and network. Finally I suggest several ways that the two perspectives might be reconciled, each involving a different conception of network and different implications for geographical research.

Spatial theory and the (relative) neglect of 'territory'

On the face of it 'territory' should be central to geographical discourse, yet it is less prominent therein than 'space', 'place', 'region', 'city', 'scale', 'landscape', and 'environment'. Even political geographers give it less attention than we might expect. Nor is this new. As Jean Gottmann noted in 1973, 'amazingly little has been published about the concept of territory' (Gottmann 1973: ix). Some political geography textbooks treat territory as a core concept (e.g. Cox 2002, Jones et al 2004) but many do not. And territory has arguably become *less* prominent as political geography's traditional interests in boundaries, morphology and resources have given way to a focus on institutions, political economy, governance and cultural politics.

The rise of post-modernist and post-structuralist approaches may have reinforced this trend. Conventional definitions of territory emphasize boundedness, identity, integrity, sovereignty and spatial coherence—concepts that post-structuralism is often thought to have demolished. By contrast, the implications of post-structuralist and relational thinking for other spatial concepts have been widely debated. Core ideas have been radically reworked, transforming geographical theory and influencing other disciplines. No longer is space treated 'as the dead, the fixed, the undialectical, the immobile' (Foucault 1980: 70).

Thus Doreen Massey argues against accounts in which '"place" is posed as a source of stability and an unproblematical identity' (Massey 1993: 63). She asserts the possibility, indeed the necessity, of developing a 'progressive sense of place' and of understanding local uniqueness as 'articulated moments in networks of social relations and understandings' (Massey 1993: 66). 'Region' has been similarly reconceptualized (e.g. Allen et al 1998, Amin 2004), and there is a growing literature on relational approaches to cities. David Harvey's

pioneering work emphasized the urban *process*, highlighting the instability and creative destruction of capitalist urbanization and the dynamic and contradictory character of capitalist cities (Harvey 1973, 1985b, 1985a, 1989a). Others have used post-structural and post-colonial ideas to re-imagine cities in terms of the decentred and networked practices of human and other actors (Allen et al 1999, Massey et al 1999, Pile et al 1999, Pile & Thrift 2000, Soja 2000, Graham & Marvin 2001, Tajbaksh 2001, Amin & Thrift 2002).

Studies of semiotics, iconography, representation, intertextuality, and the body have transformed research on landscape, situating it within relations of power and resistance, pleasure and fear, identity and difference (Cosgrove 1984, Cosgrove & Daniels 1988, Duncan 1990, Rose 1992, Duncan et al 2004: part IV). 'Environment' has also been recast as the burgeoning 'nature-culture' literature seeks to transcend the binary between human and non-human. Citing actor-networks, hybrids and rhizomes, writers such as Sarah Whatmore (2002) demonstrate the impossibility of a sharp distinction between the social and the natural.

Finally, two fundamental concepts—'space' and 'scale'—have also been transformed by the encounter between geography and social theory. Space has been reconceptualized in terms of dialectics, rhythms, hybrids, networks, rhizomes, representations, folds and topologies (Massey 1992, 1999, Law 2002, Massey 2004, Pickles 2004). Scale has been 'relativized' (Brenner et al 2003: 4) and reinterpreted as a relational, rather than a hierarchical phenomenon (Brenner 1998, Howitt 1998, Marston 2000, Brenner 2001, Herod & Wright 2002, Sheppard 2002, Sheppard & McMaster 2004).

In sum a comprehensive re-orientation of spatial theory has occurred in recent years. 'Territory', however, has been largely absent from this conceptual kaleidoscope. With some exceptions (e.g. Newman 1999a), it is notable how little attention territory has received compared with its terminological

siblings. Why should this be? There is a number of possible reasons. First, territory may be a more specialized term than place, region etc., relevant to political geography but lacking more general significance. There is some truth in this suggestion, though, as we shall see, the term is used in social and economic geography too.

Another possible reason is the perception that we are entering a post-territorial age associated with globalization (e.g. Ohmae 1990, Horsman & Marshall 1994, Ohmae 1995). This tendency has been strengthened by frequent use of the notion of 'de-territorialization'. Yet, as Stuart Elden has argued, the idea that globalization equals de-territorialization is flawed: it takes the *nature* of territory as given and it neglects the extent to which territory continues to be significant, albeit in new ways (Elden 2005).

Thirdly, perhaps territory is just more resistant to relational or post-structural reworking than other spatial concepts. If territory connotes unity, identity, integrity, boundedness, sovereignty and so on, maybe it is just not susceptible to being re-imagined in more mobile, processual and fluid ways. To put it another way, is territory irredeemable? Is it some kind of post-structuralist lost cause? Has it become a concept that we can research genealogically and subject to deconstruction, but whose discursive history is inevitably also its obituary?

Interestingly, rather greater attention has been paid to the allied notion of *territoriality* (e.g. Raffestin 1986, Sack 1986, Murdoch & Ward 1997). Robert Sack defines territoriality as 'the attempt by an individual or group to affect, influence, or control people, phenomena, and relationships, by delimiting and asserting control over a geographic area. This area', he adds, 'will be called the territory' (Sack 1986: 19). Thus a notion of territory seems to be integral to a theory of territoriality, yet many discussions of territoriality consider territory briefly, if at all. For example, in a short discussion of territoriality Ed

Soja mentions 'sovereignty', 'spatial enclosures', 'boundedness', 'regionalization', and 'locales' but does not refer explicitly to *territory* (Soja 1989: 150-51)[2]. 'Territoriality' is often treated as complex and dynamic; 'territory' as more straightforward and not in need of sophisticated analysis.

In fact territory is by no means a simple notion whose meaning can be simply assumed, and nor, it seems to me, should it be left out of the re-configuration of spatial theory. In what follows I offer one possible way forward: a consideration of the scope for a productive rapprochement between the idea of territory and the apparently contradictory concept of network.

The meanings of territory

Territory's unstable etymology: fear, furrows or terra firma?

The etymology of 'territory' is uncertain. According to the *OED* it comes from *territoire* (French), which derived in turn from *territorium* (Latin) meaning the land around a town. *Territorium* is commonly assumed to be linked to *terra* (earth) but it may also have arisen from *terrere*, meaning to frighten or terrify which also gave *territor* (frightener). *Territorium* thus meant 'a place from which people are warned off' (Roby 1876: 363). According to the seventeenth century Dutch jurist Grotius,

> The origin of the word 'territory' as given by Siculus Flaccus[3] from 'terrifying the enemy' (*terrendis hostibus*) seems not less probable than that of Varro[4] from the word for ploughing (*terendo*), or of Frontius[5] from the word for land (*terra*), or of Pomponius the jurist from 'the right of terrifying' (*terrendi iure*), which is enjoyed by the magistrates. (Grotius 1964: 667)

The link with fear has a particular contemporary resonance. Sextus Pomponius, cited by Grotius, was a second century Roman jurist. His definition of 'territory' is reproduced in the *Corpus Juris Civilis*, the great codification of Roman law undertaken for the Emperor Justinian in the sixth century:

> The word 'territory' means all the land included within the limits of any city. Some authorities hold that it is so called, because the magistrates have a right to inspire fear within its boundaries, that is to say, the right to remove the people. (*Digest*, L. xvi. 239.8)

This reveals a legal and political connection (if not a formal etymological one) between 'territory' and fear and exclusion that dates back to one of the earliest recorded definitions of the term. The present 'war on terror' has led some writers to revive the connection between territory and terror(ism) (e.g. Anidjar 2004: 54-60). So, did 'territory' relate originally to fear (*terrere*), to furrows (*terendo*) or simply to *terra firma*? As we shall see, echoes of each of these are evident in current geographical usage.

Geographical uses: delineations, graduations and resources

Territory, Stuart Elden writes, 'tends to be assumed as unproblematic. Theorists have largely neglected to define the term, taking it as obvious and not worthy of further investigation' (Elden 2005: 10). However, although surprisingly few theorists have discussed the nature of territory explicitly, in the geographical literature at least three contrasting approaches are *im*plicit. We might term these *delineated*, *graduated* and *resource-based*.

According to Anssi Paasi the notion of territory 'is first and foremost a juridico-political one—an area controlled by a certain kind of power' (1996: 17). For Jean Gottmann, '[t]he relationship of territory with jurisdiction and

sovereignty over what happens in it, is an essential one' (Gottmann 1973: 2, see also Taylor 1993: 157). 'The word *territory'*, Gottmann continues,

> has come to designate a portion of geographical space under the jurisdiction of a certain people. It signifies also a distinction, indeed a separation, from adjacent territories that are under different jurisdictions. (Gottmann 1973: 5)

'Distinction' and 'separation' signal the importance of boundaries, evoking a *delineated* conception of territory. Paasi (1996) argues that territories and the boundaries that surround them are not *a priori* legal givens, but 'imbued with politics and meaning' (28). Cartographic boundary-drawing '"hypostatizes" states' (19) and facilitates state-driven nationalisms: 'all national governments try to make persuasive use of the idea of a common territory' (53).

For John Agnew the 'most deeply rooted' assumption underpinning 'conventional understandings of the geography of political power […] is that modern state sovereignty requires clearly bounded territories' (Agnew 1999: 503). This leads to Agnew's famous 'territorial trap' for students of international relations (Agnew 1994, Agnew & Corbridge 1995: 78-100). This involves three geographical assumptions: the reification of state-territorial spaces as the fixed units of sovereignty, the rigid distinction between domestic and foreign policy, and the assumption that the territorial state is prior to society and acts as its container (see also Häkli 2001). Agnew rightly questions the assumptions that make up the territorial trap. But he takes the *nature* of territory itself largely as a given. His primary interest is in the political implications of territory and territoriality, not the theory of territory itself.

Delineated definitions are not confined to political geography. For Robert Sack boundaries are a defining feature of all kinds of territories:

> Circumscribing things in space, or on a map, as when a geographer delimits an area to illustrate where corn is grown, or where industry is concentrated, identifies places, areas, or regions in the ordinary sense, but does not by itself create a territory. This delimitation becomes a territory only when its boundaries are used to affect behaviour by controlling access. (Sack 1986: 19)

To 'affect behaviour by controlling access' is a political act, but for Sack territories are not necessarily formal political units. A company's sales force may be divided among bounded territories so that one salesperson is disbarred from operating in another's patch. Landowners may control access to their property by using fences, signs, locks and even security guards. In Sack's view such places constitute territories without being controlled by political institutions.

Stuart Elden argues that a focus on boundedness does not go far enough. A more fundamental question is what makes boundaries possible? What conception of space is required before the idea of 'boundary' can be conceived? For Elden the answer lies in the emergence of mathematical and geometric conceptions of space that allow us to think in terms of points and lines and thus ultimately in terms of the boundaried spaces we call territories (Elden 2005: 10-11).

Elden notes that territory is not 'inherently tied to the state' (2005: 8), but his main concern is with theories that focus on the territorial aspect of the modern state. Other kinds of territory (and other kinds of state) are not so dependent on boundary drawing, and may, therefore, involve other ways of conceiving space. Frontier zones and marchlands are defined by the *lack* of a clear boundary. The term 'territory' is still applied to the spaces they enclose but it carries a rather different sense. The defining principle here is the *gradient* (of

power, influence or control), rather than the line, and *graduated* territories can overlap. Some medieval city-states, the expanding overseas colonies of European empires, and home areas of kinship groups in acephalous societies exemplify graduated territoriality.

Social geography's references to territory often imply graduation. In his classic account of the use of space by street gangs in Philadelphia David Ley mentions territory (1974: 212), but also terms such as 'marchland' that connote graduation. In their *Introduction to Social Geography* (1977) Emrys Jones and John Eyles defined territory thus:

> the space[,] which may be continuous or discontinuous, used by an individual or group for most interactions and which, because of this, goes a long way towards satisfying the needs of identity, stimulation and security' (Jones & Eyles 1977: 38).

With its emphasis on 'individuals' and 'groups', rather than institutions and states, this departs from juridico-political definitions. 'Most interactions' clearly refers to a whole range of possible kinds of social relationships. This is reinforced by their account of four types territory: 'body territory', interactional territory', 'home territory', and 'public territory' (Jones & Eyles 1977: 39). Only 'public territory' approaches juridico-political definitions of territory, and then it is closer to current notions of 'public space'.

Some early accounts drew explicit parallels between human territories and those of other animals (e.g. Stea 1965: 13) and the reduced prominence of territory in recent social geography may reflect wariness over lingering ethological connotations. These may also partly explain the dominance of juridico-political definitions (Paddison 1983: 15-17). Sack, however, is adamantly anti-ethological:

> Perhaps the most well-publicized statements of human territoriality have come from biologists and social critics who conceive of it as an offshoot of animal behaviour. These writers argue that territoriality in humans is part of an aggressive instinct that is shared with other territorial animals. [My] view […] is quite different. Although I see territoriality as a basis of power, I do not see it as part of an instinct, nor do I see power as essentially aggressive. (Sack 1986: 1)

Territoriality as the basis of economic power is a central theme in economic geography, which uses both delineated and graduated notions of territory. The geographies of some markets can be understood as graduated territories (e.g. the overlapping sales areas of adjacent retailers), while the delineated territories of modern states are a central component of economic governance and economic development policy. For example, local economic development in the context of globalization is marked by increasing competition between territories for investment and public transfers (Harvey 1989b). Moreover, capital accumulation both generates and requires territorial differentiation (Harvey 1982, Massey 1984).

In the concluding essay of *Production, Work, Territory* (1986b) Allen Scott and Michael Storper write that 'territory (i.e. humanly differentiated geographical space) is a creature of those forces that underlie the material reproduction of social life and that find their immediate expression in various forms of production and work' (Scott & Storper 1986a: 301). This quotation is striking for a number of reasons: (i) it makes no allusion to the juridico-political definition of territory; (ii) it does not assume that territory is bounded; (iii) it sees territory as the product of social processes and specifically of 'production and work'; (iv) territory is one of the three organizing concepts in the book's title, but this definition only appears ten pages from its end; and (v) the definition of territory as 'humanly differentiated geographical space' is brief

to the point of off-handedness and so broad that it is virtually synonymous with many other generic terms such as 'spatiality', 'socio-spatial variation', 'uneven development', or even 'human geography'. It seems that in economic geography too, the nature of territory is taken as largely self-evident.[6]

Ten years later, Storper's *The Regional World: Territorial Development in a Global Economy* gave territory rather more attention. For Storper, 'territory' is basic factor in economic development along with technologies and organizations (Storper 1997: 39-43). Territory involves a spatial concentration of linked economic activities. Concentration occurs initially because proximity reduces transaction costs. Eventually, however, the fact of concentration itself begins to affect economic relationships. For example, regional specificities may develop that exert a pull 'long after the input-output (transactional) reasons that brought geographical concentration of the production system have disappeared or could be eliminated' (Storper 1997: 41).

This approach underpins Storper's discussion of 'territorialized economic development'. For Storper,

> [a]n activity is fully territorialized when its economic viability is rooted in assets (including practices and relations) that are not available in many other places and cannot easily or rapidly be created or imitated in places that lack them. (1997: 170 check pagination)

Here, then, we have a third notion of territory. With its emphasis on *resources* (assets) Storper's definition refers more to the substantive characteristics of territory than to its spatial form. Territories are defined not by gradients of power, nor by boundary lines, but in terms of their internal qualities. Some qualities, such as deposits of natural resources, may pre-exist the emergence of a particular space as a territory, but others are social relations that co-

evolve with the territory. Is it fanciful to see in Storper's stress on production an updating of Grotius' speculative mention of territory's link with ploughing (*terendo*)?

The territory–network dichotomy

The understandings of territory typical of economic geography are thus distinct in important respects from those prevalent in the work of political geographers. In both cases, however, the general assumption is that territories and networks are antithetical, representing contrasting or even competing forms of socio-spatial organization. As Storper notes, '[t]hough many commentators assign territorially based institutions, especially nation-states, a continuing role in the global economy, the balance of power is thought to be tipping in favor of globalized organizations, networks, practices, and flows' (1997: 169). For Storper the 'economy of flows' represents deterritorialization, in contrast to the territorialized 'economy of interdependencies and specificities' (Storper 1997: 177).

Similarly, Agnew comments that '[p]olitical power […] is exercised from sites that vary in their geographical reach. This reach can be hierarchical and network-based as well as territorial or contiguous in application' (Agnew 1999: 501). In a set of arguments designed to challenge the assumptions of the 'territorial trap', Agnew suggests that human history has been marked by at least four different 'spatialities of power': the 'ensemble of worlds', the 'field of forces', the 'hierarchical network', and the 'world society' (Agnew 1999: 503-08). Territorial states correspond to the 'field of forces' model. Agnew writes that 'in the contemporary world there is evidence for the effective co-presence of each of these models, with the former territorial models somewhat in eclipse and the latter network models somewhat in resurgence' (1999: 506). The emerging informational society is a 'deterritorialised network system' (1999: 512). The implication is that territories and networks are

distinct forms of organization that may co-exist but cannot be conceptually reconciled or reduced to one another.

So what is the scope for such a reconciliation? Can the apparent incompatibility between network-thinking and territory-thinking be transcended? And what would such a move do to the concept of territory? In the remaining sections of the paper I address these questions by tracing how developments in geographical thought affect how the relationship between the two concepts has been, and could be, understood.

Territory–network in recent geographical thought

Chorology and spatial analysis

To understand the world as a patchwork of territories is to think *chorologically*—in terms of the areal differentiation of the earth's surface. Chorology 'represents the oldest tradition of Western geographical enquiry' (Gregory 1994: 64) dating back to the classical Greek geography of Strabo. Areal differentiation was central to traditional regional geography (Hartshorne 1939), in which regions were understood as bounded spaces—in some sense as territories. Regional geography, and its supposed emphasis on uniqueness, were challenged from the 1950s by the various forms of spatial analysis during geography's 'quantitative revolution', and in this period network thinking first made an impact in academic geography. 'Network' did not mean a system of connected phenomena until the nineteenth century, so it is a much later notion than that of territory, though well established by the mid-twentieth century. Peter Haggett's *Locational Analysis in Human Geography*, a key text of spatial analysis, contains a whole chapter on networks:

> most movements are restricted into some sort of channel. Thus even air-routes are […] partly restricted and most movements flow along fixed channels—roads, pipelines, telephone wires. These features themselves pose distinct locational problems which are regarded here as part of a general class of network problems. Network location has a literature which includes some classic early studies (e.g. Lalanne 1863) but it is a topic which has been strangely neglected in standard treatments of locational theory. Currently it represents one of the most interesting growing points in both human geography and physical geography. (Haggett 1965: 61)

Here it is simply taken for granted that a network comprises routes along which things flow (vehicles, liquids, electrical current). In *Network Analysis in Geography* Haggett and Richard Chorley (1969: 109) state that the 'fundamental function' of a network is 'to conduct or impede flows'. It is often thought that the adoption of critical social theory in human geography from the 1970s involved a complete break with spatial analysis. Yet, as we shall see, Haggett's networks are not so different from those of Manuel Castells (Castells 1996). Castells' is concerned with the political-economy of the space of flows and with its socio-cultural implications, whereas Haggett's interests were largely limited to the geometry of networks. Nevertheless the same concept of network is present in both, and, to be fair, Haggett intended that his approach should be applied to actual networks in empirical studies.

Locational Analysis also considered territory. Haggett distinguished between unbounded 'fields' and bounded 'territories'. 'Fields' are the zone of interaction between a centre and its surrounding area . Interaction may be strong close to the centre and fade out as distance increases, but there is no definitive boundary. Haggett argues that fields present practical problems and that territories are a response to these.

> While continuous fields which fluctuate over time are the dominant pattern in the organization or regional systems, they post such severe administrative problems that human society establishes boundaries (for continuities) and discrete non-overlapping territories (for overlapping and indistinct fields). Political areas are the most readily recognizable reaction to this problem but they are by no means unique and we can argue that the clerical diocese in England, the state planning *oblast* in Soviet Russia, and the tribal area in Amerindian Brazil are all reactions to that common problem. To be sure, there are differences between parish and state but each involves the notion of property and here we refer to them by the general term *territory*. (Haggett 1965: 48)

In Haggett's account the study of territories is reduced to a question of their geometrical configuration ('packing theory') determined by efficiency. This explains the prominence of the hexagon in the spatial analysis of Walther Christaller and August Lösch. Haggett does not discuss the relationship between territories and networks, but one implication of his definitions is that whereas networks enable flow and movement, territories inhibit them. Again, territories and networks are contrasting and competing ways of organizing space.

The opposition between networks and territories is called into question by a classic application of spatial analysis to political geography: Soja's study of communications networks and territorial integration in East Africa.[7] Soja writes:

> [t]he exchange and conservation of information within a network of social relations provides the integrative glue enabling the network to survive and grow as a cohesive, organized unit. Essential, therefore, to an understanding of the integrative

> processes at work in any territorial community is a knowledge of the pattern and intensity of information flow in space […]. (Soja 1968: pp?)

The issue of whether networked and territorial views of space are complementary or incompatible thus has a rather longer history in geographical thought than is sometimes implied in current debates. Moreover, despite the development of an extensive geographical literature on social and economic networks, policy networks, transnational networks, actor-networks and so on, the older use of 'network' to refer principally to an infrastructure for moving things around is surprisingly resilient. As recently as 2000, Blackwell's well regarded *Dictionary of Human Geography* asserted that 'in human geography the term network is *mainly used* to refer to a transport network either of permanent facilities (road, rail, canal) or of scheduled services (bus, train, airlines)' (Hay 2000: 550 emphasis added). The entry's commitment to spatial analysis is clear from its heading ('networks and graph theory') and from its 'Suggested Reading'—none other than the second edition of *Network analysis in geography* (Chorley & Haggett 1974).

Territory–network: the first cut

Clearly 'network' is now used in a much wider range of senses than those suggested by the *Dictionary*. Indeed it sometimes seems as if 'networks' represent a new orthodoxy that has replaced supposedly outdated ways of writing geography in terms of bounded areas. This is an over-simplified view of intellectual history, but consistent with two common assumptions. Although opposed to one another in some respects, they both see territory and network as antithetical.

The first assumption is that the spatial organization of the world has changed from an essentially territorial to an essentially networked form. The category

'territory' was appropriate for an 'old' geographical reality, but our 'new' reality consists of networks. Modernity, with its sovereign states, national markets and distinct culture areas has given way to post-modernity, the decline of sovereignty, the development of global markets and cultural hybridity. A brave new networked world is emerging from the territorial ruins; 'de-territorialization' is its implacable logic.

The second assumption is that it is our ideas that have changed. 'Territory' is the conceptual framework of an old Geography, a modernist world view obsessed with essential distinctions between categories and spaces and driven by a desire for purification (Latour 1993). Network thinking, in contrast, can underpin a new Geography: complex, hybrid, mobile. The shift here is epistemological, from a territorial conception of space to networked one. The scales have fallen from our eyes and the world and its geographies are revealed as always already networked, territory as merely an illusion.

I have deliberately exaggerated these two views, no doubt to the point of caricature. Nevertheless, they do represent two poles in a spectrum of opinion, a spectrum I shall now explore in more detail by taking a series of further cuts through the territory/network nexus.

Territory–network: the second cut

We might call the second cut a 'territorial backlash' that can be summed up in the phrase 'territory still matters'. Against claims that the world is becoming borderless (e.g. Ohmae 1990, 1995), critics of simplified narratives of globalization stress the continuing relevance of territoriality. As economic geographer Henry Wai-chung Yeung puts it,

> The story that today's global economy is still made up of distinct national territories (as defended by the state) and local

> distinctiveness (as constituted by the spatiality of local people, cultures and social practices) may seem outdated, given the growing interpenetration of goods, capital and people, and the interdependence of national economies. There are, however, serious reasons to retell the story. (Yeung 1998: 295)

However, Yeung does not suggest that nothing has changed or that older territorialities are unaffected by growing interdependence. Territory may still matter, but it matters differently. States themselves are becoming internationalized, scales are increasingly 'relativized' (Yeung 1998: 292-3).

Political geographers and state theorists have also emphasized the changing character of territory (Newman 1999b). James Anderson has argued that a more complex form of territoriality is evident in contemporary Europe, one that parallels medieval forms of political spatiality more than the twentieth century's neat partitioning of Europe into sovereign states (Anderson 1996). Neil Brenner also counsels against state-centrism and accounts that naturalize state territoriality, but stresses that this does not mean that territory is unimportant:

> Those globalization researchers who have successfully transcended […] state-centric geographical assumptions have generally done so by asserting that national state territoriality and even geography itself are currently shrinking, contracting, or dissolving due to alleged processes of 'deterritorialization'. A break with state-centrism is thus secured through the conceptual negation of the national state and, more generally, of the territorial dimension of social life. I […] argue, however, that this methodological strategy sidesteps the crucially important task of analyzing the ongoing reterritorialization and rescaling of political-economic relations under contemporary capitalism. (Brenner 2004: 30)

Brenner's discussion of networks concerns interurban networks—more or less formal policy networks made up of institutions of municipal governance (Brenner 2004: 286-94). These are effectively networks of (municipal) territories, and thus they constitute one possible rapprochement between networked and territorial perspectives (see also Leitner et al 2002). The territory/network dichotomy remains intact, however. Territories and networks can coexist, but the nature of each remains largely unchallenged. By contrast, two other contributions to the geographical literature on globalization consider the territory-network relationship in a more far-reaching way.

Peter Dicken and his colleagues advocate a network 'methodology for analysing the global economy' (Dicken et al 2001: 91). Researchers should 'identify actors in networks, their ongoing relations and the structural outcomes of these relations' (91). Networks are not free-floating, however, and the 'socio-spatial constitution of […] individuals, firms and institutions' (91) remains important. Furthermore, Dicken et al emphasize the practices that produce networks, rather than formal analyses of network relations. And they challenge scalar thinking, arguing that '[d]ifferent scales of economic processes simply become links of various lengths in the network' (95).

Moving to a network approach, however, should not 'denigrate the role of the territorial state in global economic processes':

> National regimes of regulation continue to create a pattern of 'bounded regions', and networks of economic activity are not simply superimposed upon this mosaic, nor is the state just another actor in economic networks. (Dicken et al 2001: 96 original emphasis)

Thus networks exhibit territoriality and (state) territories affect networks in 'a mutually constitutive process: while networks are embedded within territories, territories are, at the same time, embedded into networks' (Dicken et al 2001: 97). This clearly represents another possible rapprochement between networked and territorial approaches. Yet for Dicken et al, distinct underlying logics remain. Networks and territories interact, they are even 'mutually constitutive', but they are still different kinds of things.

Erik Swyngedouw also sees networks as central to the spatial restructuring of capitalism:

> The molecular strategies of capital as mobilised by a myriad of atomistic actors produce rhizomatic geographical mappings that consist of complex combinations and layers of nodes and linkages, which are interconnected in proliferating networks and flows of money, information, commodities and people. (Swyngedouw 2004: 31)

At the same time, these networks co-exist with and in part depend upon territories:

> these economic (and partially cultural and social) networks cannot operate independently from or outside a parallel political or institutional organisation […]. Without territorially organised political or institutional arrangements […] the economic order would irrevocably break down. (Swyngedouw 2004: 32)

For Swyngedouw territories and networks are interdependent. Indeed their relationship is dialectical and its outcome is a process of scalar transformation (rescaling) as social groups struggle for control over space and place. Dialectics function through contradictions and thus Swyngedouw emphasizes

'the tensions between the rhizomatic rescaling of the economic networks and flows on the one hand and the territorial rescaling of scales of governance on the other' (Swyngedouw 2004: 33).

Swyngedouw thus offers a third rapprochement between territory-thinking and network-thinking. Territories and networks are not mutually exclusive—they not only co-exist, but are also interdependent. Their interdependence is not smoothly functional, however, but riven by tensions and contradictions that drive geographical—especially scalar—change. Swyngedouw advances the debate by rejecting 'either … or' in favour of 'both … and'.

Territory–network: the third cut

This is not the end of the story, however. Dicken et al and Swyngedouw both link networks with the economic and territories with the political and institutional. States are territorial, economic activities are networked. They co-exist and interact in various ways, but are fundamentally different ways of organizing social and material relations over space.

Two linked binaries are present here: economics–politics and network–territory. Each reinforces the other. The first risks reproducing the separation of the political and the economic for which some versions of regulation theory have been criticized. The second assumes that there is some essence or underlying principle to territoriality that resists re-thinking in terms of networks. My third cut considers the possibility that no such essence or principle exists, and that territory-thinking and networking-thinking do not reflect distinctively different underlying realities, but are, rather, different conceptualizations of a single reality.

Swyngedouw and Dicken et al both draw on actor-network theory, while Swyngedouw's account echoes Gilles Deleuze in its references to rhizomes

and to de- and re-territorialization. Since, to put it rather crudely, both actor-network theorists and Deleuze emphasize that *everything is networked, everything is rhizomatic*, is it possible that what we think of as territories and territorial insitutions are in fact composed of networks? Could territories somehow be rhizomatic?

There is a number of senses in which this might be so. We might recast the relationship between territory and network in one of the following ways. First, we could think of 'territory' as the label we give to a particular set of the *effects* of networks. The operation of certain kinds of networks gives rise to the appearance of territoriality. Second, maybe territories are special kinds of networks. For example, when network relations become particularly intense within a particular area the result may comprise what we understand as territory. Third, we could think of territory as a mental construction placed on the geography of networks—a more or less arbitrary carving up of a fluid and networked world. A fourth hypothesis is that territory represents a snapshot of the geographies of networks at a particular moment in time. In the fourth cut I explore some of these possibilities in a little more depth.

Territory–network: the fourth cut

Any conceptual reconciliation between network-perspectives and territory-perspectives will fail if the network–territory binary is mapped homologically onto the economics–politics binary. Instead we need to see political, institutional and regulatory relations as always already network relations. *Pace* Swyngedouw, it is not only the economy that is comprised of rhizomes and flows. The state is also rhizomatic.

So far I have used 'network' and 'network-thinking' as if they refer to singular phenomena. In fact 'network' is used in at least four different ways in social science. Each of these can be related to the territory-network nexus, with

different results in each case. As a shorthand we might refer to them as *transmission networks*, *social networks*, *topological networks* and *actor networks*.

In *transmission networks* the connections are like the pipes in a heating system or the rails in a railway system. Substances (water, trains) traverse the network, but remain largely unaffected by it. The network merely facilitates movement. In human geography such networks typically involve the flow of money, goods, people and information. The most developed example of this kind of network thinking is Castells' account of the emergence of a network society based on the 'space of flows' (Castells 1996). By thinking about networks like this it is possible to argue, as Castells does, that the world has become more networked. For Castells this is a result of technological and organizational changes in society, especially the development of new information and communication technologies.

Social networks here refers to networks of social relations such as a circle of friends, a set of firms linked together through supply chains, or a pattern of political connections and obligations. Here we are no longer talking about network links as the conduit for the transport of other things, rather it is the links themselves that constitute a social relation. Interaction is not necessarily continuous. In fact it is likely to be sporadic. Kinship networks are maintained through intermittent correspondence, telephone calls and visits; buyer-supplier links are activated only when a transaction occurs; political favours are called in when circumstances require and so on. Such networks are thus virtual, ready to be actualized on particular occasions. Social network analysis is one methodological approach for their study. In political science, policy network analysis and rational choice theory have provided two more, and in economic geography supply chain modelling offers another approach.

Like transmission networks *actor-networks* involve the movement of material things (of all kinds and sizes) (Latour 1987, 1993, Law & Hassard 1999, Law

2002). However, like social networks their geographies are not confined to pre-existing infrastructures. Actor-network theory is a philosophy of connection, in which the most important methodological injunction is 'follow the thing'. In the actor-network approach kinship networks are understood not as a virtual presence, but in terms of the material connections through which they are produced and sustained. Letters, telephone calls, gifts, remittances, emails as well as human bodies moving on foot, in cars, boats, planes and so on do not 'give rise to' a network that is then somehow separate from them, rather they *are* the network. No distinction can be made between 'social' networks and material networks, it is the movement of matter that forms the social. Even a face to face conversation is material, involving neurons, electrical impulses, vocal chords, air pressure changes, and ear drums. Objects, such as planes or computers, are understood as themselves the effect of relational networks.

Finally, the notion of *topological networks* is a way of thinking about the complex spatialities of actor-networks. In a topological world space is no longer an absolute container of objects that have their own defined geographies. Instead we can understand space as bent, folded, curved, stretched, torn, discontinuous, rough or smooth. In this view the actor-networks associated with the American government's attack on Iraq in 2003 bring the Pentagon and Baghdad into close topological proximity. Generals in Washington can follow battlefield engagements in real time and with similar information to that available to local commanders. By contrast topologies can also involve extension and rupture so that those living close together in Cartesian space can be separated by a vast gulf when their relationships (or the lack of them) are viewed topologically.

Each of these senses of 'network' can be related to territory. First, territories might be understood as *nodes* in transmission networks. A simple example is the international merchant shipping industry where shipping lanes and route

networks connect together different territories and carry goods and people between them. In more complicated examples networks may transect or pass over or past territories. This kind of network approach has little effect on the conceptualization of territory, although it may mean, as in Castells' work, that territory comes to be seen as less important, or as potential hindrance to the smooth operation of the 'space of flows'. If we understand networks as transmission networks, in other words, we will not bring about a reconciliation between network-thinking and territory-thinking.

Secondly, social networks may be related to territory in terms of their *density* or *intensity*. Urban geographers have shown how cities may be defined in terms of the density of social interactions. Such accounts retain a strong sense of connection between the 'internal' life of the city and processes and practices elsewhere. The material environment of the city is understood as a territorial condensation of a particularly dense part of the network of networks that comprise social life. This comes much closer to transcending the territory-network binary. The 'territory' of the city is not something other than the networks that flow through the city, rather it *is* those networks as they coalesce and condense in place. Another example is Michael Storper's discussion of regions that I cited above. Although Storper sometimes uses the terms 'network' (or more frequently 'flows') and 'territory' as if they were dichotomous, in fact he sees territories as being constituted by networks. It is the intensive localized networks of inter-firm linkages that, for Storper, give rise to economic territoriality—hence his well known definition of region as 'a nexus of untraded interdependencies' (Storper 1995).

Thirdly, in the terms of actor-network theory territories are configurations of mobile *objects-in-relation*. Both the objects and their configurations are constituted as (and by) networks. To see what this means in practice we need to consider the constitution of territory—constitution in the sense of 'making' and in the sense of 'ingredients'. We need to consider how territory as an

abstract idea or principle is effectuated in the workings of what Deleuze and Guattari (1988) call assemblages. Assemblages will vary according to the kind of territory in question, and here it is necessary to be precise about whether we are considering, say, Agnew's political territories or Storper's economic territories. Although different kinds of territory may share certain formal similarities, they differ profoundly in their content.

As we have seen, a conventional feature of political territory is boundedness. But what is a boundary? As Elden (2005) notes, conceptually a boundary is a line. But a line has no material existence—it is, quite literally, one-dimensional. It has no content, mass or substance and it occupies no space. Its only properties are geometrical—length and direction. How can something so insubstantial have any social or political effect? The answer, of course, is that it only does so insofar as the idea of the line is effectuated in particular material assemblages. These are quite diverse and are also always certain to fall short of fulfilling the idea of the boundary, which is thus never achieved and always to come. This is a little different from Paasi's (1999) account of boundaries as processes and institutions. The networked assemblages that effectuate boundariness include maps, charts, surveys, aerial and satellite photographs, GIS databases, boundary posts and markers, fences and walls, texts (national legislation, political declarations and international treaties), flags and signs ('Vous sortez du secteur americain'), customs regimes, border posts and guards, civil servants, passports, rubber stamps, transport companies' regulations, and so on and on and on. And behind each of these lies other actor-networks (the manufacturers of passports and rubber stamps, for example, or the arms manufacturers that supply border guards' weapons, or the firms of international lawyers that advise governments about treaty negotiations). As Nigel Thrift (2000) has argued, in geopolitics it is frequently the 'little things'—the mundane, the everyday and the routine—that are most significant.

Finally, it seems likely that thinking about territories in terms of the topologies of their constitutive networks will require a different cartographic imagination. At the very least it is important to recognize the extent to which conventional cartography is integral to the networks through which territory is produced and policed (Pickles 2004: 107-23).

Conclusion

I began with territory because it seemed to be the neglected element in the network–territory pairing. There is a wealth of literature on network theory; much less has been written on the theory of territory. Network concepts are not the only possible basis for a recasting of the notion of territory. Nevertheless it seems to me that they provide a particularly rich seam of ideas through which to understand how the effect of territoriality arises.

Different senses of territory—the delineated, the graduated and the resource based—intersect with different concepts of networks—transmission networks, social networks, actor-networks and topological networks. I have suggested that even the 'hardest' delineated notion of territory might be rethought in the most radically networked terms. From this perspective territory 'as such' has no real existence. Moreover it should not be seen as the *product* of networked relations, since this would reimpose the idea of territory and network as separate. Territory is, rather, an *effect* of networks.

As a consequence the spaces we call territories are necessarily porous, incomplete and unstable. They are constantly produced and accomplished by countless human and non-human actors. The ideal of political territory as a perfectly bounded contiguous space across which sovereignty (or another kind of authority) is exercised smoothly, continuously and evenly belongs to Deleuze and Guattari's plane of desire. In this view, 'territory' and 'network' are not rival models, incommensurable worldviews or even the contradictory

elements of a dialectical relationship. Rather, the configurations of practices and objects, energy and matter that go by the name 'territory' are no more and no less than another set of networks. The configurations flicker and settle for a time and give the impression of territory. But territory is not a kind of independent variable in social and political life. Rather, it is itself dependent on the rhizomatic connections that constitute all putatively territorial organizations, institutions and actors.

8,000 words (including notes, excluding references)

Notes

[1] Author's translation from original French.

[2] The word 'territories' does appear on the following page in a discussion of urbanization.

[3] Siculus Flaccus, (C1st CE) Roman land-surveyor. The reference is to his *De Condicionibus Agrorum [On the condition of the fields]*.

[4] Marcus Terentius Varro (116-28 BCE) Latin author. The reference is to his *De Lingua Latina [On the Latin language]*.

[5] Sextus Julius Frontius (c.40-106 CE) Roman military writer. A translator's footnote in the English edition of Grotius' work reads: '[Grotius seems to have misread a passage of Godefroy's note on *Digest*, L. xvi. 239, which states that Frontius derived it from *terrendis hostibus*, Cujas from *terra*.]' Denis Godefroy (1549-1622) was a French jurist who produced (and annotated) the first modern edition of the *Corpus Juris Civilis* of which the *Digest* forms a part. Jacques Cujas (1520-1590) was a French jurist.

[6] Similar features distinguish Ann Markusen's *Regions: The Economics and Politics of Territory* (1987). 'Regions' and 'regionalism' are carefully defined (16-18) but, despite its prominence in the book's title, territory is not. Again it seems that the meaning of 'territory' is thought too obvious to need detailed discussion.

[7] Cited approvingly in the second edition of *Locational Analysis* (Haggett et al 1977: 488).

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