Assemblages and actor-networks : rethinking socio-material power, politics and space

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Assemblages and Actor-networks: Rethinking Socio-material Power, Politics and Space

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Abstract

Assemblage thinking and actor–network theory (ANT) have been at the forefront of a paradigm shift that sees space and agency as the result of associating humans and non-humans to form precarious wholes. This shift offers ways of rethinking the relations between power, politics and space from a more processual, socio–material perspective. After sketching and comparing the concepts of the assemblage and the actor–network, this paper reviews the current scholarship in human geography which clusters around the four themes of deterritorialisation/reterritorialisation; power; materials, objects and technologies; and topological space. Looking towards the future, it suggests that assemblage thinking and ANT would benefit from exploring links with other social theories, arguing for a more sustained engagement with issues of language and power, and affect and the body.

Assemblages and Actor-networks: New Paradigms?

If language, representation and discourse were the pet concepts of the 1990s, assemblage, actor-networks and materiality might well be those of the 2000s. From geography's preoccupation with meaning in the wake of the cultural turn in the late 1980s, the pendulum has come full circle with a return to a concern for materiality – objects, bodies and matter. Calls for 'rematerializing geography' have sounded throughout the sub–disciplines, in political geography (Dittmer 2013a; Meehan et al. 2013; Squire 2014a), feminist geography (Colls 2012; Slocum 2008), urban geography (Lees 2002), social and cultural geography (Jackson 2000; Whatmore 2006), resource geographies (Bakker and Bridge 2006) or GIScience (Leszczynski 2009). Assemblage thinking and actor–network theory (ANT) have been at the forefront of this revalorisation of the material, or indeed the socio–material: the co-constitution between humans and non–humans.

Both assemblage thinking and ANT have much to say about the spatial dimensions of power and politics. That is because both approaches are concerned with why orders emerge in particular ways, how they hold together, somewhat precariously, how they reach across or mould space and how they fall apart. These aspects render assemblage thinking and ANT of particular interest not only to political geographers but indeed to anyone examining the exercise of power and politics. Within political geography, there have recently been explicit calls for a broader move towards socio–materiality, mobilising assemblages and actor–networks as concepts (Depledge 2014; Dittmer 2013a; Müller 2015).

Actor-network theory and assemblage thinking are now also finding a somewhat delayed and cautious reception in fields such as international relations (IR) (e.g. Acuto and Curtis 2013; Barry 2013a; Best and Walters 2013; Büger and Gadinger 2007). It is interesting to note that some of this is mediated through geography, for example in interventions from human geographers (Barry 2013a) or scholar explicitly referencing geographical debates (Acuto and Curtis 2013).

In IR, too, politics and power are the bread-and-butter business of the discipline, and assemblage thinking and ANT have been utilised to decentre reified totalities. They serve to disassemble the black boxes of international politics – states and international organisations – question the *a priori* of scales and interrogate the production of knowledge and expertise and the enrolment of manifold technological devices in that process.

This article pursues three aims. First, it renders an introduction to assemblage thinking and ANT, in particular to the aspects that relate to an understanding of power, politics and space. Second, it reviews the state of the art of research in political geography that utilises these approaches, divided into four themes: deterritorialisation/reterritorialisation; power; materials, objects and technologies; and topological space. Given the numerous similarities between them, the paper has opted to treat studies drawing on assemblage thinking and ANT together here, duly noting the differences that exist between the two approaches. Third and last, it points to barriers and paths not taken as avenues for further engagement.

Assemblage

Assemblage is a concept that goes back to French philosophers Gilles Deleuze and Félix Guattari. Foreshadowed in *Anti-Oedipus* and its focus on desiring machines (Deleuze and Guattari 1972, 1983), it was refined in subsequent publications, notably in their best known work, *A Thousand Plateaus* (Deleuze and Guattari 1980, 1987). Deleuze defines an assemblage as follows:

> It is a multiplicity which is made up of many heterogeneous terms and which establishes liaisons, relations between them across ages, sexes and reigns – different natures. Thus, the assemblage's only unity is that of co-functioning: it is a symbiosis, a 'sympathy'. It is never filiations which are important but alliances, alloys; these are not successions, lines of descent, but contagions, epidemics, the wind. (Deleuze and Parnet 1987, 69 [1977])[1]

In other words, assemblage is a mode of ordering heterogeneous entities so that they work together for a certain time.

The English term 'assemblage' is the translation of the French original *agencement*. It captures well that an assemblage/agencement consists of multiple, heterogeneous parts linked together to form a whole – that an assemblage is relational. But the translation risks losing some connotations of *agencement*, especially that of an arrangement that creates agency. For Deleuze and Guattari, there are thus no pre-determined hierarchies, and there is no single organising principle behind assemblages ('it is never filiations … these are not successions, lines of descent'), be it capital or military might. All entities – humans, animals, things and matters – have the same ontological status to start with. However, as Elizabeth Grosz (1994, 167) remarks, 'it is not that the world is without strata, totally flattened; rather, the hierarchies are not the result of substances and their nature and value but of modes of organization of disparate substances'.

Although there have been attempts to construct an assemblage *theory* (DeLanda 2006), Deleuze and Guattari have a much less grand agenda. For them, the concept of the assemblage is a provisional analytical tool rather than a system of ideas geared towards an explanation that would make it a theory. Assemblages have at least five constituent features:

1 Assemblages are *relational*. They are arrangements of different entities linked together to form a new whole. The crucial thing to note here is that for Deleuze, assemblages consist of relations of exteriority. This means two things. First, it implies a certain autonomy of the terms (people, objects, etc.) from the relations between them. Second, 'the properties of the component parts can never explain the relations which constitute a whole' (DeLanda 2006, 10).

2 Assemblages are *productive*. They produce new territorial organisations, new behaviours, new expressions, new actors and new realities. This also means that they are not primarily mimetic; they are not a representation of the world.

3 Assemblages are *heterogeneous*. There are no assumptions as to what can be related – humans, animal, things and ideas – nor what is the dominant entity in an assemblage. As such, one can also say they are socio-material, eschewing the nature–culture divide (Bennett 2010).

4 Assemblages are caught up in a dynamic of *deterritorialisation* and *reterritorialisation*. *Deterritorialisation/reterritorialisation* is a central axis of an assemblage, where 'reterritorialized sides, … stabilize it, and cutting edges of deterritorialization, … carry it away' (Deleuze and Guattari 1987, 88).[2] Assemblages establish territories as they emerge and hold together but also constantly mutate, transform and break up.

5 Assemblages are *desired*. 'Desire constantly couples continuous flows and partial objects that are by nature fragmentary and fragmented' (Deleuze and Guattari 1983, 6).[3] Assemblages thus have a corporeal component.

Deleuze and Guattari use Franz Kafka's oeuvre to illustrate and refine their notion of the assemblage (Deleuze and Guattari 1975, 1986). Indeed, Kafka's fragmentary novels *Der Prozeß* [*The Trial*] and *Das Schloß* [*The Castle*] encapsulate most features of the assemblage and are recommended reading for elucidating the highly abstract concept of the assemblage. In them, everything seems linked to everything else: there are new, unexpected realities at each turn, entities congeal just to fall apart in the next instance and desire to reach an elusive goal (the castle and the end of the trial) recomposes them anew every time. Consider this vignette of the inside of the chimeric castle as a metaphor for the assemblage, always leading on to new entities, but never revealing an overarching organising principle or transcendental origin.

> Barnabas is admitted into certain rooms, but they're only a part of the whole, for there are barriers behind which there are more rooms. Not that he's actually forbidden to pass the barriers. … And you mustn't imagine that these barriers are a definite dividing-line. … There are barriers in the rooms that he enters and they don't look different from those that he hasn't passed. So it can't be assumed from the outset that beyond those latter barriers are rooms of an essentially different kind from those in which Barnabas has been. (*The Castle* – own translation from Kafka 1926)[4]

The more the protagonist pushes to pin down the castle – to understand its logic and to meet its representatives – the more it recedes, forever elusive. As soon as we pass one barrier, the next one looms. Kafka also embraces topological conceptions of space, such as when two points at opposite ends of the city turn out to be contiguous and linked through a door, epitomising the idea of a folded or crumpled space (Deleuze and Guattari 1986, 73; see also Serres and Latour 1995, 60–64, 109–110).

Beyond literary fiction, however, the assemblage has also distinct utility for analysing the interrelation between power, politics and space. While Deleuze and Guattari's work 'is not political philosophy in the sense that it provides tools for the justification or critique of political institutions and processes, … it is a political ontology that provides tools to describe transformative, creative or deterritorializing forces and movements' (Patton 2000, 9). As such, it has sparked interest with political philosophers (Bennett 2010; Connolly 2011; DeLanda 2006; Grosz 2008; Protevi 2009), but also lately with political geographers, who have appreciated it for its concern with materiality and new ways of conceptualising power and space.

Actor-network Theory

Actor-network theory shares many cognate concerns with Deleuze and Guattari's assemblage. One way to think of ANT is as an empirical sister-in-arms of the more philosophical assemblage thinking. Like assemblage thinking, it is interested in the provisional, socio-material ordering of entities beyond one universal principle. Pioneered by Bruno Latour, Michel Callon and John Law, ANT has sprung from Science and Technology Studies (STS). Its intellectual roots are diverse, but among the most important forebears are sociologist Gabriel Tarde, who Latour once called his 'grandfather' (Latour 2002, 118) and to whom he credits the first attempts to raze distinctions between macro and micro, and nature and society; philosopher Michel Serres, and his focus on heterogeneous associations, tracing encounters and relations, and the emergence of order in disorder (Bingham and Thrift 2000; Law 2009; Serres and Latour 1995); and semiotician Algirdas Greimas, whose notion of semiotics – in which signifiers only acquire meaning through relations with other signifiers – Latour extends to encompass all forms of order – building involving objects and language towards a *material semiotics* (Akrich and Latour 1992; but see Lenoir 1994, for a critique).

The parallels between the concepts of the actor-network and the assemblage are significant. ANT also conceives of relations of human and non-human entities as producing new actors and new ways of acting. For ANT, all entities – whether it is atoms or governments – stand on equal ontological footing to begin with. The associations established between them make the difference of whether one becomes more powerful than the other. Hence, Latour (2005a, 9) also dubbed ANT a 'sociology of associations'. Similar to assemblage thinking, ANT insists on the processual nature of the socio-material: 'There is no social order. Rather, there are endless attempts at ordering' (Law 1994, 101). Several good introductions to ANT are now available, both by its major proponents (Law 2009; Mol 2010) and within geography (Murdoch 2006).

Latour and his colleagues have refined ANT through the analysis of concrete cases – the production of knowledge in Louis Pasteur's laboratory and the attempt to construct a new aircraft or the failed design of Aramis, a new personal rapid transport system. Since the 1990s, however, ANT has been taken up beyond the realm of STS and has gathered a particularly large following in geography. This is because ANT speaks to many concerns at the heart of geographical research, including the relationship between the natural and social world, the question of distance and scale and the role of technologies.

With its increasing adoption in the social sciences, ANT has provoked a series of critical assessments, some of which also apply to assemblage thinking (e.g. Bloor 1999; Latour 1999; Castree 2002; Collins and Yearley 1992; Fine 2005; Haraway 1991; Kirsch and Mitchell 2004; Star 1991; Whittle and Spicer 2008). Critics have taken the approach to task for eschewing to think about how power differentials, for example race, gender or class, impact on who or what is able or unable to form associations in the first place and thus for failing to acknowledge unequal power relationships. ANT also does not distinguish *a priori* between humans and materials, ignoring that humans are capable of intentions and pursue interests whereas things are not. With its task of following the associations that form networks, critics claim that ANT risks describing endless chains of associations without ever arriving at an explanation for the reasons and differences in network formation processes. In a similar vein, ANT discards social context, for example cultural or historical factors, for explanation, unless it can be traced in the formation of concrete networks. In so doing, it also neglects to problematise the researcher and how his or her position is implicated in fashioning ANT accounts of certain phenomena.

While there are clear parallels between ANT and assemblage thinking, there are also notable differences. It is worth noting at least three major ones. First, ANT insists that agency is exclusively a mediated achievement, brought about through forging associations. There is nothing

outside associations, and to become capable of action, entities need to form aggregates and find allies to produce an actor-network. Thus, what becomes political is a matter of what is made political through associations: 'the political significance of materials is not a given; rather, it is a relational, a practical and a contingent achievement' (Barry 2013b, 183). With its focus on relations of exteriority, on the other hand, assemblage thinking posits that the component parts of an assemblage can have intrinsic qualities outside associations that impact on and shape the assemblage. It posits an open-ended set of capacities that is unpredictable and exceeds the properties of the component parts (B. Anderson et al. 2012, 179–181). As a consequence, seeing the world through associations, ANT has been criticised for being blind to what remains outside associations but may shape them nevertheless.

Second, compared to assemblage thinking, ANT offers a more concrete conceptual and methodological apparatus that can be applied to empirical work. Terms such as 'centre of calculation', 'oligopticon', 'black box', 'immutable mobiles' and 'translation' or 'overflows' help to make sense of the formation of associations. The pioneers of ANT have delivered a string of analyses to illustrate these concepts. This makes ANT wieldier for empirical application. With its call for following the ways of the ant, a 'trail-sniffing, and collective traveller' (Latour 2005a, 9), it exhorts researchers to engage in tracing associations, wherever they may lead.

Third, researchers working in the spirit of ANT have developed a much clearer notion of ANT's relation to politics. Barry (2001, 201, 6) distinguishes between *politics* – here understood as the institutionalised politics of parties, governments, parliaments and so on – as 'a way of codifying particular institutional and technical practices' and *the political* as 'the ways in which artefacts, activities or practices become objects of contestation'. The task of politics is to contain dissent and channel actions into particular directions with a whole material apparatus, practices and atmospheres that need to be studied to see how politics is made and becomes possible in the first place (Barry 2013a, 425). Paradoxically, however, politics has anti-political effects, when it closes down the space for contestation and disagreement and when it turns politics into a technical issue (Barry 2002). This is where material artefacts come in. As things and technologies complicate, partake in and reshape the process of governing, they foreground *the political*, opening up new controversies and new grounds for contestation.

Departing from these controversies and contestations, ANT scholars have proposed a new mode of politics in a much broader sense than that of institutionalised politics: an 'ontological politics' (Mol 1999, 2002). It starts from the assumption of the world as multiple and performative, i.e. shaped through practices, as different from a single pre-existing reality. This multiplicity, however, is often disguised when one truth claim, one kind of knowledge, comes to dominate over others. Seeing the world as performative has important implications for an ontological politics: it means that it can and indeed should be shaped by everyone and that knowledge about the world is contingent and not the prerogative of experts. As a consequence, Callon and others (Callon, Lascoumes, and Barthe 2009) have called for a 'democratisation of democracy': the participation of laypersons and specialists alike in the process of politics. For Latour (2005b) and others (e.g. Barry 2013b; Braun and Whatmore 2010), politics should become material, a *Dingpolitik* revolving around things and issues of concern, rather than around values and beliefs. Stem cells, mobile phones, genetically modified organisms, pathogens, new infrastructure and new reproductive technologies bring concerned publics into being that creates diverse forms of knowledge about these matters and diverse forms of action – beyond institutions, political interests or ideologies that delimit the traditional domain of politics (Barry 2001, 28–33). Rather than matters of fact, to be known in just one way, they are matters of (often very diverse) concern. Whether it is called ontological politics (Mol 1999), *Dingpolitik* (Latour 2005b) or cosmopolitics (Stengers 2005), this form of politics recognises the vital role of non-humans, in concrete situations, co-creating diverse forms of knowledge

that need to be acknowledged and incorporated rather than silenced (e.g. Law and Singleton 2014; Moser 2008).

Making Use of Assemblage Thinking and Actor-network Theory: Empirical Clusters

Over the past few years, assemblage thinking and ANT have established themselves as newcomers on the agenda of political geographers – not just as useful tools but as contenders for new paradigms with broader import. Despite some differences, both approaches speak to similar concerns and exhibit similar theoretical sensitivities and lineages – which warrants reviewing the studies that draw on them together in the following. Work that works with ANT and assemblage thinking in political geography clusters in four major areas: deterritorialisation/reterritorialisation; power; materials, objects and technologies; and topological space. The boundaries between these are far from clear-cut, given that assemblages and actor-networks cannot be reduced to only one of these aspects. In different studies, however, assemblages and actor-networks are mobilised to different ends, and the clusters reflect the different emphases.

DETERRITORIALISATION/RETERRITORIALISATION

Research in this vein is interested in disassembling phenomena we tend to take for granted and examine how they are made up by making diverse elements hold together as a whole for a while (territorialisation) but subject to continuous centrifugal forces at the same time (deterritorialisation). In this mould, researchers have conceptualised energy poverty or race, for example, as socio-material processes with shifting boundaries and provisional forms (Harrison and Popke 2011; Saldanha 2007). ANT has been used to problematise how organisations – the International Monetary Fund, the Foreign Ministry and the European Union – are treated as black boxes and taken for granted, whereas they are assembled from a multitude of processes of ordering humans and things that make it difficult to draw boundaries (Müller 2012).

Particular attention has gone to that most central organisation of all for political geographers: the state. Instead of conceiving the state as a unified actor, for Deleuze and Guattari, the state is an assemblage – 'a phenomenon of intraconsistency. It makes points resonate together, … very diverse points of order, geographic, ethnic, linguistic, moral, economic, technological particularities' (Deleuze and Guattari 1987, 433). Thus, the state becomes an effect rather than the origin of power (Mitchell 1999). An increasing number of scholars have, over the past years, joined the chorus in calling for seeing the state as an assemblage of heterogeneous elements and reconstructing the socio-material basis of its functioning (Dittmer 2013a; Mountz 2004; Painter 2006; Passoth and Rowland 2010; Schueth 2012). Geographers have become particularly interested in investigating the spatial reach of state power, i.e. the question of how action is coordinated at a distance, territorial control is achieved, borders are drawn and reinforced (Allen and Cochrane 2007, 2010). After all, spatial state power neither exists *a priori* nor is it evenly distributed in space: it runs up against obstacles, works better in some places than in others, is more contested here and is less contested there.

POWER

More than just introducing greater complexity into phenomena to avoid facile generalisations, assemblage-inspired and ANT-inspired research also has a political edge: it questions the naturalisation of hegemonic assemblages and renders them open to political challenge by exposing their contingency. By insisting that phenomena do not have to be a particular way just because they are a particular way, assemblage thinking and ANT open up avenues for alternative

orderings and thus for political action. There is an important connection with the concept of power here. Deleuze and Guattari differentiate between two different understandings of power, *puissance* and *pouvoir*, which are both translated as 'power' into English. *Puissance* is immanent power and can be understood as a potential, as the capacity to affect and be affected inherent to entities. *Pouvoir*, by contrast, is actualised power: a concrete ensemble of relations (Deleuze and Guattari 1987, xvii).

Pouvoir corresponds to ANT's understanding of power as the formation of a common interest and single will through the translation of initially disparate entities that stabilises an actor-network. 'Understanding what sociologists generally call power means describing the ways in which actors are defined, associated and simultaneously obliged to remain faithful to their alliances' (Callon 1986, 224). Unlike *puissance,* it is a mediated achievement in the sense that it is dependent on establishing relations (Allen 2011). In ANT, the notion of the centre of calculation (Latour 1987) and the later one of the oligopticon (Latour 2005a) both speak to how power arises from making connections across space. This conceptualisation of a mediated power has been appropriated as an important complement to Marxist notions of power, showing the actual working of power rather than assuming it on the basis of uneven structural relations (Holifield 2009).

Political geographers have been active in mapping this establishment and exercise of power through the making of alliances that join entities together – whether this is in the techno-political mechanisms of making global connections and implementing neoliberal planning in Amman, Jordan (Parker 2009), the constitution of international networks of governance (Kendall 2004), the mobilities of policies and knowledge in the travelling of experts and diffusion of best-practice examples (McCann and Ward 2012), the building of powerful alliances for or against resource exploitation (Horowitz 2012; Wallace 2012) or the use of humour in geopolitical simulations (Dittmer 2013b).

One illustrative study in this mould is Rutland and Aylett's (2008) inquiry into how climate change became a political priority in Portland, Oregon. They pair ANT with governmentality to study the process of enrolling entities into local environmental governance and aligning their interests. In this case, the diverse goals of local businesses, citizens, politicians and environmental groups coalesced around a shared interest in keeping investment in new energy supply to a minimum. This resulted in embracing energy efficiency as a key goal. To reach this goal, however, local energy consumption had to become a measureable, calculable and thus governable object. It was around this shared goal that citizens and businesses alike were mobilised and their self-governing capacities enrolled in order to launch a climate change policy. What Rutland and Aylett manage to show in their study is how diverse entities come together to bring something new, in this case a new policy, into being and how this new policy depends on its object, energy consumption, being rendered legible in the first place. They thus achieve both a fine-grained picture of the operations of power as *pouvoir* and the contingent politics it brings into being.

MATERIALS, OBJECTS AND TECHNOLOGIES

A key contribution of assemblage thinking and ANT to human geography in general has been the renewed attention to material things – bodies, documents, weapons, animals, infrastructure, earth and so on. Materials come in all shapes and sizes, and work on and with them has traversed a broad range of empirical fields. Assemblage thinking and ANT have found particular favour with researchers working on nature and society. Thus, the assemblage of fisheries and controversies over fishery policies (Bear 2013; Bear and Eden 2008), the multiple forms of situated global climates rather than one unified global climate (Blok 2010) or the role of animals such as cougars in delimiting space (Collard 2012) have drawn attention to how it is not humans

alone who decide over space and place. What ANT and assemblage thinking have allowed re-searchers to do is to articulate a sensitivity to the material interventions of matter and the animal world in how agency and politics are constituted (Whatmore 2006): 'humans are always in composition with nonhumanity, never outside of a sticky web of connections or an *ecology*' (Bennett 2004, 365). At its most ambitious, such a position has sought to sketch out 'a materialist theory of politics, one that allows for a place for the force of things' (Braun and Whatmore 2010, x).

Take Andrew Barry's work on how materials and technologies can become political. He argues that

> techniques and devices can become political – not just in the sense that they are used as instruments in conflicts between political parties or interests (of course they can be), or the sense that the deployment of expertise offers a way of resolving political controversy (for better and for worse, it can do) – but in the sense that technical designs and devices are bound up with the constitution of the human and the social. Any attempt to contest or challenge the social order may then involve – and probably will in-volve – an effort to contest the development and deployment of technology as well … the contestation of technical designs and practices may open up new objects and sites of politics. (Barry 2001, 9)

In his two monographs (Barry 2001, 2013b), he demonstrates that what becomes political – what becomes a matter of concern – depends on what becomes bound up with other issues and entities. Thus, technologies become political when reconfiguring boundaries, making connec-tions and creating interoperability where previously there was none. For Barry (2001), Europeanisation, for example, is to a significant degree a technological process, involving harmonisation and standardisation that create what he calls 'technological zones'. Similarly, he shows how materials, such as an oil pipeline, can have different properties and changing bound-aries, depending on what entities can be associated with them. Far from being a stable, unified actor, the pipeline he studied in the Republic of Georgia assumed different forms and spatial boundaries, transforming what issues could be bound up with it and what could be contested, making it almost impossible to be regulated and governed (Barry 2013b).

The objects of interest for political geographers have ranged from mundane, seemingly trivial things to far-flung infrastructural networks and high technology. Thus, the trash left behind by people crossing the Mexico–US border becomes entangled in the making and unmaking of mi-grants as human (Squire 2014b; Sundberg 2008). Documents are crucial for enrolling entities into actor–networks, such as during conferences on international treaties, but are themselves, in turn, the product of multiple practices (Weisser 2014). Infrastructure networks, whether pipelines, cables or tracks, have enjoyed considerable popularity, perhaps because the link be-tween the provision of basic services and politics is so patent. Although physical infrastructure may appear as though it was fixed in space and far from malleable, authors have documented that its boundaries can be surprisingly fluid (Barry 2013b; Bouzarovski 2010; Cupples 2011). Finally, an assemblage and ANT perspective lends itself to enquiring into the proliferation of technologies both into our everyday lives and into warfare. With the ubiquity of smart phones, big data and algorithms that regulate online activities, our life worlds have already become in-separable from technology (Cheney-Lippold 2011; Wilson and Graham 2013). Military activ-ity, too, is increasingly becoming technologised, not least through drones, cyber warfare and precision technologies, partly blurring, partly re-instituting the boundaries between humans and technology, but certainly expanding the repertoire of military action (Ek 2000; Gregory 2010). The shared feature of these studies is their insistence that materials experience an eman-cipation from their role as passive recipients and start to co-articulate agency and shape political practices.

TOPOLOGICAL SPACE

Perhaps the most immediately spatial implication of adopting an assemblage or ANT perspective is their view of space as topological (cf. Martin and Secor 2014). In other words, what counts is not metric distance but how closely connected entities in a network are. Latour expresses this in a catchy image: 'I can be one metre away from someone in the next telephone booth, and be nevertheless more closely connected to my mother 6,000 miles away' (Latour 1996, 371). Space, from this perspective, becomes folded or crumpled, almost like a handkerchief, whose ends, if laid out flat on a table, are far from each other but end up close together when scrunched. Such a view is becoming more and more relevant with the emergence of technologies that mediate long metric distances, such as video conferencing, voice-over-IP and social media. Facebook and other social network sites are perhaps the best examples of such a crumpled topological space, but the exercise of state power, too, can be thought of in topological terms (Allen and Cochrane 2010).

A similar argument applies to scale. It, too, does not pre-exist the making of associations in a network. The global, the national and the local are all effects of more or less dense connections. Latour argues that even the largest organisations, the so-called global players, are just made up of local interactions in the sense that they connect one entity with another: 'If we wander about inside IBM, if we follow the chains of command of the Red Army, … we never leave the local level. Could IBM be made up of a series of local interactions? The Red Army of an aggregate of conversations in the mess hall?' (Latour 1993, 121). This has immediate political implications. The global is no longer somewhere 'out there', the relentless juggernaut of globalisation, with no one to blame for job cuts, rising carbon dioxide emissions and so on, other than impersonal, globalisation-imposed necessities (German has the impersonal expression of *Sachzwang* for this). Instead, the global is also made right there, wherever we live (cf. Marston, Jones III, and Woodward 2005). The constitution of scales is thus an empirical matter, to be determined through tracing connections and breaks (cf. Legg 2009).

Nowhere does this notion of topological space shine through better than in studies of social movements and their translocal organising (Davies 2012; McFarlane 2009; Routledge 2008). McFarlane (2009) shows how social movements, in his case the Indian chapter of Slum/Shack Dwellers International, are at once place based but exchange knowledge, practices and materials across sites. He insists that assemblage is a more adequate concept to describe social movements than the dominant network metaphor, for assemblage retains a focus on emergence and allows the component parts to exceed the network; that is, it incorporates relations of exteriority. 'Unlike network, assemblage does more than emphasise a set of connections between sites in that it draws attention to history, labour, materiality and performance. Assemblage points to reassembling and disassembling, to dispersion and transformation, processes often overlooked in network accounts' (McFarlane 2009, 566). Translocal social movements, as a highly fluid social form, exhibit precisely these characteristics. An assemblage account draws attention to globality not so much understood as a presence in many places, but as capacities of mobilising resources, people or documents to produce action.

Into the Future: Co-articulating with Other Social Theories

If ANT and assemblage thinking are about relations and associations, then those relations and associations need not just be studied for the empirical cases at hand but also forged with neighbouring social theories. This would do greater justice to the manifold intellectual lineages from which ANT and assemblage thinking draw. For example, despite numerous similarities between the two approaches and similar intellectual trajectories, there are few studies that bring ANT and assemblage thinking themselves into dialogue. Such dialogue would be productive,

however, because it would provide assemblage thinking with the elaborate conceptual appara-
tus of ANT, while opening up ANT to the capacities of the virtual beyond networked associ-
ations. Exploring potential overlaps was one purpose of this article when presenting the two
approaches together. But there is also much potential in linking ANT and assemblage thinking
to other social theories and theorists.

POWER AND LANGUAGE

The connection to Foucault is an obvious one, given his interest in material orders (Lemke
2014) but remains underexplored. Law (2009, 145), for example, points out that ' "actor-
networks" can be seen as scaled-down versions of Michel Foucault's discourses or epistemes'.
Scholars have shown how Foucault's dispositifs can be thought of as reterritorialised assemblages
(Legg 2011) and how actor-networks can be made productive for analysing governmentality
(Barry 2001). While assemblages have been regarded as champions of fluidity, that does not
mean that everything can change at will or is in flux. Above all, for political geographers, it is
important to understand what is fluid, what is fixed, when, where and for what reasons.

In other words, how does power result from assemblages and actor-networks and what ef-
fects does it have? How is the emergence and the shape of 'matters of concern' an uneven pro-
cess, in which not all can partake in the same way? Territorialisation can be one aspect of power,
operating through shutting out contingency and entrenching one particular assemblage or
actor-network over others. Deterritorialisation too, however, can produce power, perhaps in
much more frustrating ways, as the opponent and oppressor remains elusive: 'suppleness can
be as constraining and more crushing than rigidity, as in *The Castle* where the contiguous offices
seem to have movable barriers between them, a fact that renders even more unbearable all of
Barnabas's ambition: always another office after the office that one has entered into' (Deleuze
and Guattari 1986, 86).[5]

In particular, Foucault's work would help make us more alert to the importance of language
and meaning for assemblages and actor-networks (Müller 2013). In the turn to materialities, the
preoccupation of the cultural turn with symbolic orders may have somewhat faded from view.
Yet, Deleuze and Guattari's assemblages feature an enunciative dimension, next to a machinic
one, underscoring the importance of discourse and meaning in stabilising and changing
assemblages.

AFFECT AND THE BODY

There is much potential in thinking assemblages and actor-networks with and through affect
and emotions – concepts that have come to prominence in the wake of feminist and more-
than-representational theorising in geography (K. Anderson and Smith 2001; Pile 2010; Thrift
2008). One could even argue that affect and emotion are the *tertium quid* of the social and the
material, making the socio-material hold together or fall apart. They are what pulses through
assemblages and actor-networks and what constitutes their power (*puissance*).

Nigel Thrift (2008) has been most active, though not uncontested (Tolia-Kelly 2006), in
pushing affect on geographers' political agenda, arguing that it can be engineered to serve po-
litical goals or buttress certain ideologies. Just like assemblages, affect is socio-material and
decentred: 'affect is distributed between, and can happen outside, bodies which are not exclu-
sively human, and might incorporate technologies, things, non-human living matter, discourses'
(Lorimer 2008, 552). Love, hate, enthusiasm, joy, sadness, desire and so on are crucial ingredi-
ents of politics, whether in media representations (Carter and McCormack 2006), war cam-
paigns (Ó Tuathail 2003) or canvassing (Schurr 2013).

Psychoanalysis could constitute another important resource (Pile 2010; Stavrakakis 1999), with its attention to desire that is also prominent in Deleuze and Guattari. Particular assemblages hold their shape for a while, as subjects desire (or detest) them with and through their bodies, straining towards an ever-illusive fullness. It is this desire which animates Kafka's protagonists in *The Castle* and *The Trial* to keep searching for the elusive access to the castle or the acquittal in the trial – and thus get ever more entangled in the assemblage, becoming complicit in reproducing instead of razing it.

Whatever the future paths, accounts need to be able to show how they produce useful insights different from other approaches and why this is important. It is crucial to avoid that assemblage thinking and ANT become slapped onto research as convenient labels in an indiscriminate fashion and come to serve as elaborate covers for business as usual. For assemblage thinking and ANT to develop their full political force, examining the production of difference is key. Both politically and intellectually, we thus need to constantly ask ourselves: *What difference does it make*?

Acknowledgement

Short Biography

Martin Müller is a Swiss National Science Foundation Professor in the Department of Geography at the University of Zurich and a Senior Research Fellow at the University of Birmingham. His theoretical interests congeal around discourses, assemblages and actor–networks. He does research on the planning and impacts of mega-events and on natural disturbances, such as insect infestations, in protected areas. He has just completed a major project on the Sochi 2014 Winter Games and is now looking at the World Cup 2018 in Russia. He read for an MPhil at the University of Cambridge and holds a PhD from Goethe-Universität Frankfurt am Main. Further information: www.martin-muller.net

Notes

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[1] 'C'est une multiplicité qui comporte beaucoup de termes hétérogènes, et qui établit des liaisons, des relations entre eux, à travers des âges, des sexes, des règnes – des natures différentes. Aussi la seule unité de l'agencement est de co-fonctionnement: c'est une symbiose, une « sympathie ». Ce qui est important, ce ne sont jamais les filiations, mais les alliances et les alliages; ce ne sont pas les hérédités, les descendances, mais les contagions, les épidémies, le vent.' (Deleuze and Parnet 1977, 65)

[2] 'Mais, d'après un axe vertical orienté, l'agencement a d'une part des *côtés territoriaux* ou reterritorialisés, qui le stabilisent, d'autre part des *pointes de déterritorialisation* qui l'emportent.' (Deleuze and Guattari 1980, 112)

[3] 'Le désir ne cesse d'effectuer le couplage de flux continus et d'objets partiels essentiellement fragmentaires et fragmentés.' (Deleuze and Guattari 1972, 11)

[4] 'Er kommt in Kanzleien; aber es ist doch nur ein Teil aller, dann sind Barrieren, und hinter ihnen sind noch andere Kanzleien. Man verbietet ihm nicht gerade weiterzugehen … Diese Barrieren darfst du dir auch nicht als eine bestimmte Grenze vorstellen … Barrieren sind auch in den Kanzleien, in die er geht; es gibt also auch Barrieren, die er passiert, und sie sehen nicht anders aus als die, über die er noch nicht hinweggekommen ist, und es ist auch deshalb nicht von

vornherein anzunehmen, daß sich hinter diesen letzteren Barrieren wesentlich andere Kanzleien befinden als jene, in denen Barnabas schon war.'

[5] 'Cette souplesse est aussi contraignante et plus essoufflante que la dureté, comme dans le Château où les bureaux contigus semblent n'avoir que des barrières mobiles qui rendent encore plus insensée l'ambition de Barnabé: toujours un autre bureau après celui dans lequel on est entré.' (Deleuze and Guattari 1975, 153)

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