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Mapping the Toolbox: Assemblage Thinking as a Heuristic

Introduction

Assemblage is a concept that has received contrary responses in a number of scientific communities.[1] On the one hand, adaptations of assemblage thinking have been bound up with hopes to achieve a better understanding of newly emerging social phenomena traded under the heading of "globalization".[2] It offers, as Collier and Ong put it, "analytical and critical insight into global forms by examining how actors reflect upon them or call them into question".[3] Others, such as DeLanda, promote assemblage thinking as it, according to those that use it, provides an epistemological tool that goes beyond established relations of micro- and macrostructures, stresses the relation of volatility and

1 The paper is part of a project that investigates medical practices as a field of mundane social practices that is assumed to be suited for revealing processes of spatialization under the global condition. Medical treatment is a social practice "the state" is intensely involved in – in terms of legislation (e.g. approval of physicians; licensing or proscribing active substances, therapies, and medical appliances; and regulation of the health insurance sector), in terms of infrastructural provision (e.g. hospitals and policlinics), and in terms of research investment, public health control, etc. Albeit with remarkable differences among countries, one can state that almost every moment, every movement and decision in any treatment situation is – to a greater or lesser extent – regulated, defined, enabled, formed, limited, structured, and, hence, captured by the presence of "the state". However, at its fringes, a broad range of heterogeneous activities have been observed, such as patients looking for therapies that are not available (e.g. reproductive therapies or organ transplantation) or not affordable (e.g. dental care) in their home country, health insurance companies actively propagating medical treatment abroad under special payment schemes, as well as new forms programmes promoting cooperation of hospitals, doctors, and insurances across European borders.

2 See, e.g., C.R. Janes and K.K. Corbett, "Anthropology and Global Health", *Annual Review of Anthropology* 38 (2009), pp. 167–183; S. Legg, "Of Scales, Networks and Assemblages: The League of Nations Apparatus and the Scalar Sovereignty of the Government of India", *Transaction of the Institute of British Geographers* 34 (2009), pp. 234–253; S. Sassen, *Territory, Authority, Rights: From Medieval to Global Assemblages*, 2nd edn., Princeton: Princeton University Press, 2008.

3 S.J. Collier and A. Ong, "Global Assemblages, Anthropological Problems", in: S.J. Collier and A. Ong (eds.), *Global Assemblages: Technology, Politics, and Ethics as Anthropological Problems*, Hoboken: Wiley-Blackwell, 2005, pp. 3–21, at 14.

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stability, and cuts through the distinction of "things" and "enunciations".[4] Extending to the realm of the pre-discursive and being rooted in psycho-analytical thinking, it offers emancipation from established ways of conceptually framing empirical research through the epistemological imaginary it provides. It is particularly expected to comprehend emerging practices that cut across established boundaries and contexts and, at the same time, unite *different* contexts and thus link allegedly separated fields. Moreover, it has been discussed as an epistemological key tool to regain conceptual access to the material and materiality in geography.[5]

On the other hand, assemblage has been criticized as an ambitious, fuzzy, and overloaded concept that (in the best case) mediates a "playful and critical aesthetics".[6] Located at the crossroads of analysis and aesthetics, its lack of analytical rigour has been acknowledged several times – a quality that might also be mirrored by the ease with which the term has crossed disciplinary boundaries from psychoanalysis/schizoanalysis to anthropology, geography, sociology, political sciences, etc. It is not surprising that some harsher comments consider the term "an odd, irregular, time-limited object for contemplation"[7] and underline "the built-in obsolescence of the term in the global futures market of academic authority"[8] – not least because of some "more obfuscatory theoretical formulations of the term by anthropologists referencing (but not always reading) Deleuze and Guattari".[9] John Allen, a geographer working on topological concepts in geography, however, regards assemblage as a term that "should perhaps allow us to do certain things and enable us to think in certain ways that were not possible before".[10]

In order to explore some of the analytical perspectives that might be offered by assemblage thinking for the study of processes of spatialization under the global condition, this chapter assesses four bodies of assemblage-centred literature that employ the concept for rather different, though partly interrelated, purposes: (1) assemblage thinking as an anti-holistic paradigm, (2) assemblage as a concept addressing conduct and directionality, (3) assemblage

4 M. DeLanda, *Assemblage Theory*, Edinburgh: Edinburgh University Press, 2016.

5 C. McFarlane, "The City As Assemblage: Dwelling and Urban Space", *Environment and Planning D: Society and Space* 29 (2011) 4, pp. 649–671.

6 G.E. Marcus and E. Saka, "Assemblage", *Theory, Culture & Society* 23 (2006) 2–3, pp. 101–106, at 103.

7 Ibid., p. 102.

8 M. Sparke, "Triangulating Globalization", review of *Territory, Authority, Rights: From Medieval to Global Assemblages* by S. Sassen, pp. 1–7, at 2, (accessed 16 March 2014)

9 Ibid.

10 J. Allen, "Powerful Assemblages?", *Area* 43 (2011) 2, pp. 154–157, at 154.

as a methodological strategy to dissect socio-biological entities, and (4) assemblage as a concept comprehending globalization. From that, I suggest employing assemblage thinking not as a coherent theoretical body but to use it as a heuristic that allows entities to be addressed by focusing attention on their formation processes through "relations of exteriority",[11] their heterogeneous nature, and their potential directionality. In the following part, I discuss the problem of methodological underdetermination that is of particular relevance for the empirical scope of the concept. Finally, the paper takes a brief look at some implications assemblage thinking could have concerning the analysis of processes of spatialization.

Mapping Strands of Assemblage Thinking

Strands

Having become a concept that jumps remarkably easily across disciplinary boundaries, the term assemblage is subject to a broad range of interpretations. The following section, however, is confined to four fields of debate that are summarized as anti-holistic approach, conduct and directionality, the human body as terrain, and performing globalization.

Anti-holistic Approach

Though primarily rooted in psychoanalysis/schizoanalysis, Deleuze and Guattari's elaboration on assemblage serves as the main source for a social-scientific adaption of the concept. Manuel DeLanda's interpretation epitomizes this first strand.[12] In his interpretation, which is confined to the understanding of "social wholes",[13] assemblage is introduced to discuss the complex nature of social entities by pointing to the way these entities are produced through relations. Assemblages, thus, are temporary stable formations emerging from certain so-called "strata" through "*objective articulatory processes* [original

11 Referring to Deleuze, M. DeLanda, *A New Philosophy of Society: Assemblage Theory And Social Complexity*, London: Continuum, 2006, p. 10; see also DeLanda, *Assemblage Theory*, p. 2.
12 DeLanda, *A New Philosophy of Society*; DeLanda, *Assemblage Theory*.
13 DeLanda, *Assemblage Theory*, p. 22.

emphasis] that yield a molar whole from a population of molecular parts".[14] Upon emergence, an assemblage is assumed to produce effects on the components it consists of as "it immediately starts acting as a source of limitations and opportunities for its components".[15] This is called "downward causality".[16] Not only is an assemblage irreducible to its parts, its parts are merely formed and called into existence through the assembling process.[17]

In this rather abstract theoretical imagination, assemblages are characterized by two features, or parameters: the degree "to which an assemblages homogenises its own components"[18] – its degree of *territorialization*, as it is called by Deleuze and Guattari – and the degree to which the identity of the emerging entity is formed by certain "expressive components"[19] – its degree of *coding and decoding*. A despotic state apparatus, as he exemplifies, develops a stronger regime of coding of manners, property, trade, etc. than a liberal one.[20] By "parameters" – or "knobs" as he calls it elsewhere – DeLanda indicates that a certain arrangement might be more or less territorialized and more or less coded. Assemblages and strata are not opposites but rather phases that can be transformed into the other. In terms of parametric thinking, a strata is the "phase" when both parameters "have high values",[21] that is to say it is highly territorialized (homogenized) as well as highly coded.

Considered to be opposed to holistic concepts, this first strand of assemblage thinking focuses on articulatory processes instead of pre-existing entities, on constant reshaping, and on the mutual definition of elements through relations. Furthermore, it underlines that the identity of "elements" and "entities" are defined through relations and, thus, are extrinsic instead of being intrinsic. In order to illustrate parametrical thinking of this type, DeLanda refers to Deleuze's discussion – though not fully elaborated – of the subject/subjectivity. Deterritorialization, thus, would mean a process that "takes the subject back to the state it had prior to the creation of fixed associations between ideas, that is, the state in which ideas and sensations are connected as in a *delirium* [original emphasis]".[22] This first strand applies assemblage as an abstract theoretical

14 Ibid., p. 23.
15 Ibid., p. 21.
16 Ibid.
17 Ibid.
18 Ibid., p. 22.
19 Ibid.
20 Ibid., p. 23.
21 Ibid., p. 26.
22 Ibid., p. 27.

imagination that facilitates the application of a certain explanatory mechanic to a broad range of formation processes of certain entities – spanning a steel plant,[23] Marina Bay of Singapore,[24] Iceland as an island laboratory,[25] community forest management,[26] land as a resource,[27] the sea,[28] Irish holy wells,[29] the climate,[30] carbonscapes,[31] and international relations.[32] Though the studies vary remarkably regarding the entities they discuss, there seems to be an underlying consent for the fruitful perspectives it derives from the role it plays in *dissecting established entities*.

Conduct and Directionality

A second strand of assemblage-oriented approaches revolves around conduct and directionality. Several scholars mention in their works that assemblage thinking has some parallels and interconnections to literature focusing on the problems of governing raised in Foucault's work on biopolitics.[33] Being occupied with the question of how political reason (*raison d'État*) is implemented in Western societies, Foucault introduced the notion of assemblage to identify and highlight a distinctive combination of political knowledge and technology that allows a population to be governed[34]: the military-diplomatic apparatus

23 D. Swanton, "The Steel Plant as Assemblage", *Geoforum* 44 (2013), pp. 282–291.
24 E.X.Y. Yap, "The Transnational Assembling of Marina Bay, Singapore", *Singapore Journal of Tropical Geography* 34 (2013), pp. 390–406.
25 B. Greenhough, "Assembling an Island Laboratory", *Area* 43 (2011) 2, pp. 134–138.
26 T. Murray Li, "Practices of Assemblage and Community Forest Management", *Economy and Society* 36 (2007), pp. 263–293.
27 T. Murray Li, "What is Land? Assembling a Resource for Global Investment", *Transaction of the Institute of British Geographers* 39 (2014), pp. 589–602.
28 C. Bear, "Assembling the Sea: Materiality, Movement and Regulatory Practices in the Cardigan Bay Scallop Fishery", *Cultural Geographies* 20 (2013), pp. 21–41.
29 R. Foley, "Performing Health in Place: The Holy Well as a Therapeutic Assemblage", *Health and Place* 17 (2011) 2, pp. 470–479.
30 S. Arora-Jonsson et al., "Carbon and Cash in Climate Assemblages: The Making of a New Global Citizenship", *Antipode* 48 (2016) 1, pp. 74–96.
31 H. Haarstad and T.I. Wanvik, "Carbonscapes and Beyond: Conceptualizing the Instability of Oil Landscapes", *Progress in Human Geography* (2016) preprint, pp. 1–19.
32 M. Acuto and S. Curtis (eds.), *Reassembling International Theory: Assemblage Thinking and International Relations*, Wiesbaden: Springer, 2013.
33 See, e.g., Legg, "Of Scales, Networks and Assemblages".
34 M. Foucault, *Security, Territory, Population: Lectures at the Collège de France 1977–78*, Basingstoke: Palgrave Macmillan, 2009, p. 384; the course summary (p. 437) speaks of "technologies".

and the apparatus of police. Their function is "to maintain a relation of forces" and to enable "the growth of each of the forces without the break-up of the whole".[35] From this ontological[36] understanding of assemblage as the distinctive (and actual/tangible) technologies and knowledge through which a *raison d'État* takes shape and unfolds follows an explicative interest how a certain assemblage has been arranged and develops in order to successfully serve these functions.

The notion of assemblage does not mirror a general or abstract interest in processes of emergence at first hand, but a more reconstructive interest in the "internal forces" – the mechanisms of security – ensuring the functioning of a "state" and the management of its population at a certain point of time. Directly referring to Foucault, Miller and Rose develop their interpretation of assemblages precisely from the problem of how governing is realized through conduct and "conducting of conduct"[37] and, consequently, provide an explanation of assemblages that "bring persons, organizations and objectives into alignment".[38] With the notion of assemblage, the authors comprehend the functionality and value of certain "elements" – or rather instruments – of the social world through which government can be exerted:

> devices, tools, techniques, personnel, material, and apparatuses that *enable authorities to imagine and act upon the conduct of persons* [emphasis added], individually and collectively and in locals that were often distant. These were assemblages that enabled what we termed, borrowing loosely from the writings of Bruno Latour, "government at a distance".[39]

Taking up the idea of directionality, Barry, in his study on technological zones, offers a more pronounced version of "agencement or assemblage" by defining it as a zone "that accelerates and intensifies agency in particular directions, and with unpredictable and dynamic effects".[40] He speaks of "a structuring of relations, which has a normative force, but one which does not necessarily take

35 However, assemblage is not a very prominent or stabilized term in this case; the table of content of the English translation, for instance, uses both "assemblage" and "ensemble" to point to the role of technologies for implementing governmental rationality.

36 Here, I refer to Searle's understanding of the ontologically subjective: J. Searle, *Die Konstruktion gesellschaftlicher Wirklichkeit: Zur Ontologie sozialer Tatsachen*, Reinbek: Rowohlt, 1997.

37 P. Miller and N. Rose, *Governing the Present: Administering Economic, Social and Personal Life*, Cambridge: Polity, 2008, p. 16.

38 Ibid., pp. 21–22.

39 Ibid., p. 16.

40 A. Barry, "Technological Zones", *European Journal of Social Theory* 9 (2006) 2, pp. 239–253, at 241.

a disciplinary form".[41] In doing so, he, on the one hand, underlines the directing, controlling, or regulating effects of an assemblage, but, on the other hand, he avoids an overly deterministic perspective by emphasizing the *unpredictability* of effects. Structuring and alignment of agency within a formation is, however, not considered to be an open, self-organizing process but is assumed to result from a directionality that "during recent decades [. . .] has been justified, in part, by the neoliberal rationality of market liberalization and economic freedom".[42] This allows for an actual reading of assemblage to be undertaken that comes close to more structuralist perspectives, such as "apparatus" and "dispositive". It problematizes the production of relative stability and the maintenance of forces through technology and knowledge.[43] To extract a conclusion from these observations on the usage of "assemblage" in the field of governing, I assume that considering governing through an assemblage heuristic might broaden the perspective towards the fundamental heterogeneity of "things" through which governance is performed, maintained, and reproduced. Its conceptual plasticity might facilitate comparative approaches towards governance but perhaps at the expense of an empirical vagueness.

The Human Body as Terrain

Thirdly, assemblage thinking has been adapted to the discussion of the fabrication of the human body and its constant repositioning through knowledge, technology, science, and politics. In this field of enquiry, assemblage is developed as a means of "thinking bodies other than through oppositional categories which necessarily reframes our understandings of the encounters between bodies and other objects, including the technological", as Dianne Currier states by referring to the work of Elizabeth Grosz and other thinkers in the field of feminist theories and intersectional approaches.[44] Such a use of assemblage aims at disentangling the alleged identity[45] of the human body and instead introduces

41 Ibid.

42 Ibid.

43 Legg, "Of Scales, Networks and Assemblages", p. 239.

44 D. Currier, "Feminist Technological Futures: Deleuze and Body/Technology Assemblages", *Feminist Theory* 4 (2003) 3, pp. 321–338, at 325.

45 Interestingly, it has been argued that, finally, Haraway's concept of the cyborg as an amalgamation fails to break with the concept of identity precisely at the point where it is produced – at "the intersection of bodies and technologies"– as it logically presupposes (and thereby constructs) the identity it aims to overcome. See Currier, "Feminist Technological Futures", p. 323.

an idea of the human body as an assemblage that is, moreover, part of other assemblages. Though she does not work with an assemblage-related terminology, the intellectual technique Donna Haraway unfolds in her seminal work on *Simians, Cyborgs, and Women* is foundational to this debate as it offers a strategy for comprehending processes of disintegrating and decentring of the human body by questioning allegedly given boundaries and binaries, such as human/non-human, nature/technology, human/machine, and body/environment. Interestingly, her argument is based on an analysis of "the apparatus of bodily production" since the 1980s: the discovery of immunological reactions in the 1960s and the subsequent invention of the immune system as a pivot of biomedicine and biotechnology in the 1980s marks (to her) a turning point in the construction of bodies and selfs, making the immune system an "elaborate icon for principal systems of symbolic and material 'difference' in late capitalism".[46] "Bodies", as Haraway concludes, "are not born; but they are made."[47] Moreover, the body is always "a historically specific terrain".[48]

The actual terrain comes from the biomedicalization that is "made possible by such technoscientific innovations as molecular biology, biotechnologies, genomization, transplant medicine, and new medical technologies".[49] Bodies, therefore, are neither stable entities nor do they have *one* clear and identifiable boundary; instead, Haraway describes them as "material-semiotic generative nodes" with boundaries that "materialize in social interaction; 'objects' like the bodies do not pre-exist as such".[50] As Currier states, Haraway's reformulation of the body can be read as a reconstitution of "the body as an object of knowledge primarily as an information construct".[51] However, the "historically specific terrain" is not only the terrain of technoscientific knowledge but also a terrain of ethical and juridical struggles about the implications and boundaries of technoscientific inventions.

As a conclusion from this body of research, assemblage thinking here serves as a mode to develop a new perspective on the human body that challenges the very idea of its pre-given, natural integrity or identity. By subjecting the body to new biomedical technologies, not only has its discursive production

46 D.J. Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature*, Abingdon: Routledge, 1991, p. 204.
47 Ibid., p. 208.
48 Ibid.
49 A. Clarke et al., "Biomedicalization: Technoscientific Transformations of Health, Illness, and U.S. Biomedicine", *American Sociological Review* 68 (2003), pp. 161–194, at 162.
50 Haraway, *Simians, Cyborgs, and Women*, p. 208.
51 Currier, "Feminist Technological Futures", p. 322.

take on a new quality but it has also revealed the need to conceptually address the human body in a way that takes into account the dynamics of its constant production through a multitude of external conditions.

Performing Globalization

A fourth field of using assemblage revolves around globalization and globalized practices. Whereas the Foucauldian usage of assemblage is mainly restricted to his interest in the emerging "modern" technologies of governing a population – and thus does not struggle with "globalization" – the concept recently has received remarkable attention in the field of globalization. Here, I discuss two of them: The role of assemblage in Saskia Sassen's 2006 book on *Territory, Authority, Rights: From Medieval to Global Assemblages*, and in her 2010 article entitled "When the City Itself Becomes a Technology of War", as well as in Stephen Collier and Aihwa Ong's 2005 volume on *Global Assemblages*. These scholars, nevertheless, apply assemblage thinking in quite contrasting ways: Sassen's work, on the one hand, focuses mainly on what she identifies as a substantial altering of conditions of urban order that manifest in "asymmetric wars" localized "in the larger assemblages of territory, authority and rights within which they take place".[52] In framing these new conditions, Sassen depicts a rather dystopic scenario of cities, which become targets of terrorist attacks as well as mediating sites of asymmetric wars spawning all kinds of social and distributive battles around the provision and basic supply of water, food, and energy – fuelled by climate change and global warming:

> We are seeing the multiplication of a broad range of partial, often highly specialized or obscure, assemblages of bits of territory, authority and rights once firmly ensconced in national and interstate institutional frames. These assemblages cut across the binary of inside and outside, our and theirs, national versus global. They arise out of and can inhabit national institutional and territorial settings; they can also arise out of mixes of national and global elements and span the globe in what are largely trans-local geographies connecting multiple sub-national spaces.[53]

Assemblage, here, mainly denotes a certain observational awareness of changing relations between certain dimensions through which sociopolitical realities unfold. Assemblages emerge from – or even take over – established arrangements

52 S. Sassen, "When the City Itself Becomes a Technology of War", *Theory, Culture & Society* 27 (2010), pp. 33–50, at 34.
53 Ibid., pp. 45–46.

that have mainly unfolded through territorial logics, which are now increasingly being substituted by non-territorial spatialities. Sassen declares her usage of the term as purely descriptive, thereby implicitly denying any explanatory capacity. In summarizing her position, Mather aptly states that for Sassen assemblage is a

> descriptive tool that allows her to illuminate the variety of ways in which territory, authority and rights are assembled – or disassembled – in particular places. It does not, however, carry theoretical weight: she writes, "I locate my theorization elsewhere" (Sassen, 2006: 5). In other words, her *explanation* happens elsewhere.[54]

Notwithstanding, this description is not entirely pre-explanatory, even if it is meant to serve as a neutral, pre-theoretical, and innocent term. In a very fundamental sense, detaching description from explanation denies that there is no formation of a subject of enquiry without presuppositions. Any description is inevitably written from "somewhere"; relies on choices, inclusions, and, omissions; and comprises order and arrangements at least in a rudimentary way. In a more specific sense, the descriptive dimension the concept of assemblage undoubtedly entails is substantiated by epistemological considerations. Furthermore, abandoning any explanatory capacity also distracts the usage of the concept from its Foucauldian role in understanding the history of political reason and governing, which was to reveal processes of forming "associations" of heterogeneous objects, such as institutions, inventions, techniques, etc.[55]

In contrast to Sassen's "refreshingly frank refusal to play around",[56] in their debate on the analytical capacities of the term Collier and Ong explicitly present assemblage as an analytical response to what is experienced as globalization.[57] Global assemblages, as they call this group or class of emerging forms, are reactions to certain problems; they are defined as "sites for the formation and reformation of what we will call [. . .] *anthropological problems* [original emphasis]".[58] The authors argue – reminding us of Foucault's notion of problematization – that new assemblages originate from a distinctive class of problems

54 C. Mather, "Assembling Geographies of Global Crisis", *Dialogues in Human Geography* 1 (2011), pp. 342–345, at 344.

55 In retreating from a discussion of its analytical capacities, Sassen's implementation of the concept, hence – as Anderson et al. put it – "loses sight of what we take to be the key starting point of an assemblage-based analysis of the social: to understand assembling as an ongoing process of forming and sustaining associations between diverse constituents" (B. Anderson et al., "On Assemblages and Geography", *Dialogues in Human Geography* 2 (2012) 2, pp. 171–189, at 174).

56 Sparke, "Triangulating Globalization", p. 2.

57 Collier and Ong, "Global Assemblages, Anthropological Problems", p. 3.

58 Ibid., p. 4.

that arise from "forms and values of individual and collective existence [...] that [...] are subject to technological, political, and ethical reflection and intervention".[59] Therefore, globalization does not focus on "broad structural formations or new configurations of society and culture", but rather "examines a range of phenomena that articulate such shifts: technoscience, circuits of licit and illicit exchange, systems of administration or governance, and regimes of ethics and values".[60]

The "global" in global assemblages is given a double meaning by the authors. By considering certain phenomena as "global", "we meant to emphasize a peculiar characteristic of their conditions of possibility", which lies in their "distinctive capacity for decontextualization and recontextualization, abstractability and movement, across diverse social and cultural situations and spheres of life".[61] This allows a twofold perspective to be taken on the phenomena in question. The definition might be applied to phenomena that have already been disseminated and, thereby, transformed social conditions as they rely on "global" social forms that are "abstractable, mobile, and dynamic, moving across and reconstituting 'society,' 'culture,' and 'economy,'".[62] Beyond a reconstructive interest, there is also a speculative dimension in the definition, insofar that it focuses on the *potential* material technologies or specialized social expertise that *might unfold* to foster cross-contextual mobility and movement. From that, a definition of assemblage is derived that includes both the effect and the process, thereby invoking the double notion of stability and permanent shifts or recombinations:

> An assemblage is the product of multiple determinations that are not reducible to a single logic. The temporality of an assemblage is emergent. It does not always involve new forms, but forms that are shifting, in formation, or at stake. As a composite concept, the term "*global assemblage*" [original emphasis] suggests inherent tensions: global implies broadly encompassing, seamless, and mobile; assemblage implies heterogeneous, contingent, unstable, partial and situated.[63]

This line of debate essentially scrutinizes mobilization and circulation by targeting processes that cross boundaries that have been recognized/proven as being relatively stable. Consequently, this notion of assemblage brings into

59 Ibid.
60 Ibid.
61 Ibid., pp. 10–11.
62 Ibid., p. 11.
63 Ibid., p. 12.

view tension between "entity" and "process", between formation and the formed without privileging the one over the other.

Conceptual Convergences, Flat Epistemologies

Without claiming to provide an entire picture here, the four strands depicted above show some similarities if not convergences. Firstly, assemblage thinking considers formation *processes*, that is to say fluidity, changes, dynamics, and instabilities. These are addressed in two ways: On the one hand, by focusing on networked formations and emergence, assemblage thinking offers a procedural perspective on the relevance of technology in societal change. However, it not only (re)instates the relevance of "materiality", "technique", and "infrastructure" but also acknowledges that "materials experience an emancipation from their role as passive recipients and start to co-articulate agency and shape political practices".[64] On the other hand (and more generally), assemblage thinking challenges the idea of pre-givenness, unchangeability, and immutability – a perspective that it clearly shares with other sociotheoretical perspectives. What it might add to existing debates is a greater focus on the problem of stabilization and destabilization of entities.

Secondly, assemblages are considered *relational*[65] because the formation process – yielding a (new) "whole" or "entity" – is assumed to have effects on the elements it incorporates and aligns, while – in turn – elements are never completely absorbed, determined, or aligned by a certain assemblage. Hence, not only an assemblage itself is mutable, but also its networked elements are constantly transformed through their relational combination and joining of other assemblages. Consequently, in the light of assemblage thinking, causality needs to be reconsidered as it can be conceived of as neither macro-driven nor micro-driven but as inherent to formation processes. This does not mean that there is no causality at all but rather that causality is neither confined to a certain causal structure, a single centre, or some kind of upward and downward stream of causation nor to another kind of "invisible hand". At this point, the attention paid

64 M. Müller, "Assemblages and Actor-Networks: Rethinking Socio-material Power, Politics and Space", *Geography Compass* 9 (2015) 1, pp. 27–41, at 34.

65 See, e.g., DeLanda, *A New Philosophy of Society*; DeLanda, *Assemblage Theory*; D. Featherstone, "On Assemblage and Articulation", *Area* 43 (2011) 2, pp. 139–142; Müller, "Assemblages and Actor-Networks".

by assemblage thinking to relationality might help to go beyond what Hirshman and Reed call "the limitations of traditional forcing-cause arguments" and broaden – methodologically as well as empirically – what is taken into consideration to explain social realities.[66] This, however, requires a closer look at what "inherent" could mean.

Thirdly, assemblages are conceived of as being *responsive* – to a demand, a deficit, or an affordance that has become a problem from a certain perspective. Throughout the strands of debates, assemblages have been related to specific moments of inventions that supposedly reveal a new quality, in that they might fundamentally change human/social life: for example, when new modes of governing are invented, when new technologies and procedures of treating the human body arrive, or when new types of conflict emerge. Though assemblage thinking refuses monocausal models of explanation, it identifies certain generative moments: *potentialities* of technologies, *problems* of governing, and human *desires*.[67] Such a problematization, as Rabinow states, "is both a kind of general historical and social situation – saturated with power relations, as are all situations, and imbued with the relational 'play of truth and false', a diacritic marking a subclass of situations – as well as a nexus of responses to that situation".[68] Despite the question how these problematizations can be dealt with in terms of social, political, psychoanalytical, anthropological, geographical, or other ways of reasoning, it can be concluded at this point that assemblages are widely conceived of as responsive formations but presumably not in a direct or unilineal "problem solving" manner. Accordingly, the military-diplomatic apparatus and the apparatus of police react to a certain problem of governing but, however, cannot be reduced to it. Also, organ transplantation has been enabled through technical-surgical and biomedical invention as well as a steady accumulation of knowledge and expertise but, however, cannot be reduced to it.

66 D. Hirshman and I.A. Reed, "Formation Stories and Causality in Sociology", *Sociological Theory* 32 (2014) 4, pp. 259–282, at 260.

67 Assemblages are "*desired* [original emphasis]", as Müller puts it referring to Deleuze; they do not emerge from a nowhere but "have a corporeal component" (Müller, "Assemblages and Actor-Networks", p. 34).

68 P. Rabinow, "Midst Anthropology's Problems", in: S.J. Collier, A. Ong (eds.): *Global Assemblages: Technology, Politics, and Ethics as Anthropological Problems*, Hoboken: Wiley-Blackwell, 2005, pp. 40–54, at 44.

Assemblage Thinking as Epistemological Tool

Assemblage as a Heuristic

As a consequence of the preceding discussion, I suggest to employ assemblage not as a theory but as a heuristic, that is to say a strategy to address entities by directing attention at their formation processes through "relations of exteriority",[69] their heterogeneous nature, and their potential directionality. As an entity, I consider a "thing", an "object", an "event", or a "practice" that is regarded, acknowledged, addressed, and treated as a whole. I furthermore assume that – according to the "variable ontology of the social"[70] – entities possess different qualities that need to be traced. This has two relevant implications: although the entity is produced relationally, elements do not have predetermined meanings or positions but – being captured by different assemblages – instead might act in completely different ways. Accordingly, "meaning" and "position" depend entirely on the emergence of an assemblage. Furthermore, the role of an element varies, as DeLanda underlines, from "purely *material*" to "purely *expressive*".[71] Though one might object that even talking about a "purely material" role necessarily relies on expressivity, the assumed variability shifts the attention from assemblage as an entity *towards processes and acts of formation*, or *assembling*.

Furthermore, it presupposes an instance that identifies the entity standing out against an undifferentiated background; the entity is produced and, hence, necessarily becomes an imagined and represented entity. "Imagined and represented" means that the entity is perceived, that is to say seen or named an entity, as well as conceived of, that is deliberately or strategically produced. Imagination and representation of the entity – in law, arts, mass and social media, politics, literature, religion, etc. – are part of its formation.[72]

Notwithstanding, this does not mean that using the same word(s) for an entity automatically implies the same entity, quite the contrary. Law and Mol, in their study of foot and mouth disease, argue that there are three ontologically different diseases behind the same terminology – each one having its own qualities, spatialities, and temporalities. This highlights the need to

69 DeLanda, *A New Philosophy of Society*, p. 10; referring to Deleuze, see DeLanda, *Assemblage Theory*, p. 2.

70 DeLanda, *Assemblage Theory*, p. 267.

71 DeLanda, *A New Philosophy of Society*, p. 12.

72 For that, I would borrow the term re-entry from systems theory to describe that a topic once identified, named, and represented necessarily becomes an element in the sequence of following social acts, gaining, losing, and shifting meaning.

consider formation processes of entities not as universal but as relational and contextual. "Relations of exteriority" consider formation processes of social entities that are rooted in multiple logics, networks, and resources and, hence, cannot be traced back to some internal characteristics of the entity, a single causal mechanism, or another kind of linearity.[73]

"Directionality", finally, involves two aspects regarding the functioning of social entities. First, it refers to the generative, productive capacity of an entity-in-the-making to drag "elements" into it, to define these elements as elements as well as the relations between these elements, and to align them. Second, it refers to the productive capacity of entities to "have an influence" over something and generate "effects" without assuming a deterministic or linear cause-and-effect mechanism. Instead, "directionality" draws attention to the question how an entity becomes stable enough to gain an influence over social relations and to make certain outcomes probable. Focusing on directionality, thus, emphasizes the role of entity *formation* in attempts of purposeful structuring and aligning elements in a certain field.[74]

Methodological Underdetermination

One major problem of assemblage-oriented approaches arises precisely from what it is valued for: its esteem for a *naked (flat) epistemology*. Assemblages are routinely described as being composed of "heterogeneous elements".[75] Analytically, this type of study starts with addressing an allegedly stable entity (such as a production plant) and enumerates the processes of "gathering, coherence and dispersion"[76] of the respective entity. In terms of social science, the required conceptual approach is very reconstructive as "assemblage views social entities [. . .] as being formed through the connection of heterogeneous components".[77] Though offering a powerful imagination, notions of "connection", "composition", and "relation" seem to be under-conceptualized in terms of an

73 J. Law and A. Mol, "Veterinary Realities: What is Foot and Mouth Disease?", *Sociologia Ruralis* 51 (2011), pp. 1–16, at 2.

74 Müller, "Assemblages and Actor-Networks"; Murray Li, "Practices of Assemblage and Community Forest Management".

75 Collier and Ong, "Global Assemblages, Anthropological Problems", p. 5; Murray Li, "Practices of Assemblage and Community Forest Management", p. 264; Anderson et al., "On Assemblages and Geography", p. 124; Mather, "Assembling Geographies of Global Crisis", p. 343.

76 Bear, "Assembling the Sea", p. 4.

77 Swanton, "The Steel Plant as Assemblage", p. 286.

explicit definition of the spectre of connecting and relating processes. Positively said, assemblage-oriented approaches avoid any a priori constriction or reductionism of explanation because "assemblage" "is relatively agnostic about the kinds of 'stuff' that can come together in a formation story".[78] Such "stuff" includes "actions, communications, various kinds of material stuff, and a wide variety of mediations in a way that challenges traditional understandings of levels of analysis".[79] Assemblage offers, as Swanton puts it in his analysis of the assemblage of a steel plant, a "tool that copes with the overwhelming array of technologies, materials and cultures that must hold together for a steel plant to function and recognises the agency of matter". This comprises "all kinds of routine, reproduction work – health and safety, repair and maintenance, monitoring and inspection – [which] are fundamental to production".[80]

Accordingly, assemblage serves complementarily both a demand for structural but not a structuralist understanding of society and a demand for a relatively unspecific conceptual framework that provides room for manoeuvre to address the heterogeneous. Methodologically, it operates between the assumption of stable structures and the realm of pure fluidity – "heterogeneity" or "potentiality", as Anderson et al. term it referring to DeLanda.[81] From an analytical point, therefore, the answer to the question what an actual assemblage comprises is, out of necessity, open ended and non-enumerative. Indeed, it could be literally everything that serves the function of governing – which would be, in Foucault's example, the whole military-diplomatic apparatus and the apparatus of police and, in Savage's example, "everything" ("every technology") that functions as a descriptive tool. If adopted as a term for addressing processes of formation, assemblage does not privilege any "thing" but spans the spectrum from "the material", "the social", and "the affective" to "the ideological" and further on as it simply does not provide criteria to place "things" aside. Assemblage is conceptually mouldable or, as Marcus and Saka declare, it is "an experimental genre form that thus is organic to the contours of the object of study".[82] Negatively said, its non-enumerative, example-driven, and potentially random way of considering forming elements and relations does not offer a transparent basis for operationalization but, instead, runs the risk either to deliberately combine moments of explanation at disposal or to

78 Hirshman and I.A. Reed, "Formation Stories and Causality in Sociology", p. 268.
79 Ibid.
80 Swanton, "The Steel Plant as Assemblage", p. 283.
81 C. McFarlane and B. Anderson, "Assemblage and Geography", *Area* 43 (2011) 2, pp. 124–127, at 125; Anderson et al., "On Assemblages and Geography", p. 184.
82 Marcus and Saka, "Assemblage", p. 103.

fall back in some (supposed to be overcome) disciplinary routines of constructing explanation.

To overcome its methodological underdetermination, scholars have opted both for a Latourian-inspired as well as actor-network theory (ANT)-oriented as well as a Foucauldian-based explication of assemblage thinking.[83] One example for the latter can be derived from Murray Li's work on community forest management in Canada. Assemblage enriches her observational perspective as it "enables the expansion of the analytic of governmentality" and "finesse questions of agency by recognizing the situated subjects who do the work of pulling together the heterogeneous elements". First – instead of explicating the heterogeneity to which she also refers in the beginning – she identifies a number of practices through which the "continuous work of pulling disparate things together" (ibid.) is performed. The practices she explicitly names are (1) forging alignment, (2) rendering technical, (3) authorizing knowledge, (4) managing failures and contradictions, (5) anti-politics, and (6) reassembling.[84]

Forging alignment refers to practices that show a "will to govern as point of convergence and fracture" and covers the work of linking objectives and interests of parties involved. Concerning *rendering technical*, she identifies those practices that extract the problem "from the messiness of the social world" as well as those techniques that shape the problem, present the possibility of intervention, and demonstrate the benefit. *Authorizing practices* revolve around the identification of the "requisite body of knowledge". Another type of practices comprises *managing failures and contradictions*, which – for the sake of governing them – might be presented as "rectifiable deficiencies" that can be smoothed out. *Anti-politics*, then, addresses a specific mode of dealing with problems by rendering "them as a matter of techniques" and locating them in arenas of administration and expertise instead of political debate. *Reassembling*, finally, refers to a constant "grafting on new elements, reworking old ones, [and] transposing the meaning of old terms".[85]

Though it is not entirely clear if the set of practices and the categories of elements are deduced from a theoretical perspective or inductively extracted from fieldwork, the selection is informed by a Foucauldian-based interest in social struggles through which modes of governing practice unfold. By this, Murray Li offers an approach to the black box of the heterogeneous as she

83 For an ANT-oriented approach, see Müller, "Assemblages and Actor-Networks"; for a Foucauldian-based explication of assemblage thinking, see Legg, "Of Scales, Networks and Assemblages".

84 Murray Li, "Practices of Assemblage and Community Forest Management", p. 264–267.

85 Ibid.

focuses on "everything" that supports – in a broad sense – the will to govern. Likewise, anti-politics can be framed as a strategy serving an interest in governing people, relations, and problems in a different way. The "multitude" is reduced to specific aspects of practices that employ a range of elements identified as *things*, being material objects such as trees, logs, non-timber forest products, etc.; *situated subjects*, such as villagers, labourers, entrepreneurs, officials, activists; *objectives*, such as profit, pay, livelihood, control, property, etc.; and *arrays of "knowledge, discourses, institutions, laws and regulatory regimes"*.[86] However, as elements-in-practice(s), they all are subject to the representational dynamics of the formation process, including the *perceived* ontological status of the respective element. Though reductive in the sense of concentrating on practices and techniques of governance, Murray Li offers a perspective that is neither reductive in terms of methodologically predetermined boundaries, elements, and relations of the assumed entity nor does it assume a consistent and durable entity.[87]

Though assemblage thinking deserves a deeper examination of the ways it has been combined with entirely different approaches to space, the last section focuses on three aspects: (1) the spatial/non-spatial interpretation of de-/territorialization in the Deleuzoguattarian strand of assemblage thinking, (2) its attractiveness for geography, which results from its parallels to the idea of ideographic reconstruction of geographic entities, and (3) the closeness of assemblage thinking to topological concepts of space.

Slippery Slopes: Addressing "Space" in Strands of Assemblage Thinking

Territorialization

Territorialization is, according to DeLanda, a key term in the work of Deleuze and Guattari that has a very specific meaning within the parametric description of an assemblage. In DeLanda's interpretation,

86 Ibid.

87 D. Massey, "Spacetime, 'Science' and the Relationship between Physical Geography and Human Geography", *Transactions of the Institute of British Geographers* 24 (1999), pp. 261–276, at 269; Murray Li, "What is Land?", p. 590.

> [t]erritorialisation refers not only to the determination of the spatial boundaries of a whole – as in the territory of a community, city, or nation-state – but also to the degree to which as assemblage's component parts are drawn from a homogeneous repertoire, or the degree to which an assemblage homogenises its own components.[88]

DeLanda defines it as "an important parameter, or *variable coefficient*" [original emphasis] of a social whole. By referring to Deleuze and Guattari, he uses parametrical thinking in order to use the idea that the two different kinds of social wholes, stratum, or assemblage should be understood not as opposites but as phases – like substances taking on a certain aggregate state. Transition between phases is regulated through parameters. Territorializing, thus, refers to the degree to which an assemblage is homogenized; it refers "to the degree to which an assemblage's component parts are drawn from a homogeneous repertoire, or the degree to which an assemblage homogenises its own components".[89]

However, the "not only" in DeLanda's quote is telling; though primarily non-spatial, de-/territorialization apparently can work through spatial means, that is to say through the determination of spatial boundaries. Notwithstanding the double notion of territorialization with its spatial and non-spatial interpretations, geographers (not surprisingly) tend to emphasize the spatial implication. Territorialization is, as Bear in an article entitled "Assembling the Sea" underlines, "first about the acquisition, definition and reinforcement of spatial boundaries"– "whether through networks [...] or through the jurisdictional boundaries of governmental organization",[90] as he continues in quoting Braun. Consequently, territorialization is understood as "implicitly exclusionary".[91] However, the understanding of territorializing and deterritorializing developed by Bear goes beyond the expression of a political will, objective, or interest. And – as territorialization is not confined to human beings – Bear's understanding also goes beyond an animal's or a group of animals' attempt at controlling movement, proximity, and distance, including deterritorializing effects through movement caused by non-living objects like currents. Together with fish and dolphins, they are the deterritorializing elements of the assemblage, whereas fishery mainly exerts territorializing impulses. Territorialization, as Bear states, "can also refer to 'non-spatial processes which increase the internal

88 DeLanda, *Assemblage Theory*, p. 22.
89 Ibid., pp. 19–22.
90 Bear, "Assembling the Sea", p. 4.
91 B. Braun, "Environmental Issues: Global Natures in the Space of Assemblage", *Progress in Human Geography* 30 (2006) 5, pp. 644–654.

homogeneity of an assemblage'".[92] A conflict, for instance, might increase the degree of territorialization of a community in terms of exaggerating differences perceived between "us" and "them" and manifest boundary-drawing.

From this perspective follows, first, that assemblages can stimulate transformative processes and change the elements through which they are formed (armies, or "war machines", are one example deployed by Deleuze and Guattari as well as by DeLanda). Assemblages not only have top-down effects on their parts in terms of changing the component parts, they are also built of (DeLanda 2016:71) but, moreover, causality is directly linked to (depends on?) the degree of territorialization. It follows, second, that homogenizing might be accomplished through spatial means *but not necessarily has to be*, that is to say through defining areas, spatial remits, and borders performing processes of homogenizing and exclusion as two sides of the same coin.[93]

Attractiveness to Geography

The way assemblage is understood as the effect or resultant of processes of the formation of heterogeneous elements from physical substrates, living creatures, buildings, human and non-human beings, interactions, and infrastructures to emotions and ideologies reveals parallels to older concepts of holism that have been quite popular in the history of geographical thinking. Specifically, the "notion of heterogeneous actants"[94] seems to provide some continuity or recovery in geographical reasoning. Though there might be an important difference of how the *Allzusammenhang der Dinge* – a figure of thought many geographers are familiar with – has been treated as objectivity or as potentiality, there are resemblances.[95] At least with regard to geography, assemblage permits a reentering and justification of the old menagerie of objects of different ontological status, such as material, natural, and artificial objects as well as mental objects and objective knowledge. Another parallel lies in the idea of individuation and an ideographic approach in geography. Simplified to the extreme, an ideographic approach in geography refers to the uniqueness of geographic objects such as certain landscapes, whose characteristic cannot be understood fully by applying nomothetic rules as they have an expressive quality that

92 Ibid., p. 40.

93 DeLanda, *Assemblage Theory*, p. 71.

94 Bear, "Assembling the Sea", p. 3.

95 There is, of course, a fundamental difference in the way stability is thought of being existent or something that is constantly in "becoming".

results from a close interaction of a potential multitude of elements. If we reduce this ideographic approach to its essence, apparently there is a similarity to DeLanda's interpretation of the entity of an assemblage:

> Communities and organisations are historically individual entities, as much so as the persons that compose them. While it is true that the term "individual" has come to refer to persons (or organisms in the case of animals and plants), it is not incoherent to speak of individual communities, individual organisations, individual cities, or individual countries. The term "individual" has no preferential affinity for a particular scale (persons or organisms) but refers to an entity that is historically unique.[96]

Besides permitting a re-entry of holistic thinking through the backdoor, reading assemblage theory this way can easily be taken as a justification for identifying "classical" geographic objects such as the Alps, the Great Plains, or the Steppe as emergent entities that can be traced backed in terms of their respective processes of individuation. Though DeLanda does not go into detail at this point, we can at least state that assemblage thinking *this way* sets the stage for a resuscitation of encompassing geographic concepts, such as a certain landscape or city or any other ideographic entity "out there". Indeed, at first glance, this could be read as a call for a historical reconstruction of "geographic" entities. However, this is not the primary aim if we follow Bear quoting Braun's "brief exposition of geographies of assemblage [that] comes through understanding that "entities [. . .] may be usefully treated as products of historical processes'".[97] This, as Bear continues, "relates to Cresswell's call to re-focus "on the vertical aspects of place – the "thereness" of a particular location and locale that is both the product of horizontal flows and a reason for those flows combining precisely there". From a disciplinary perspective, assemblage-based notion of entities come close to an understanding of "place specificity" that has been developed by Doreen Massey in her elaboration on power geometries. Here, she suggests considering "what gives a place its specificity is not some long internalized history but the fact that it is constructed out of a particular constellation of relations, articulated together at a particular locus". A certain representational trope, hence, should not be conflated, neither with the extent of a formation process nor with its alleged coherence.[98]

96 DeLanda, *Assemblage Theory*, p. 13.

97 Bear, "Assembling the Sea", p. 15.

98 D. Massey, "Power-geometry and a Progressive Sense of Place", in: J. Bird et al. (eds.), *Mapping the Futures: Local Cultures, Global Change*, Abingdon: Routledge, 1993, pp. 59–69, at 66.

Topology

Though assemblage thinking does not propose a single or uniform concept of space, I would follow Müller in his assumption that "[p]erhaps the most immediately spatial implication of adopting an assemblage [. . .] perspective is [its] view of space as topological".[99] In echoing the debate mainly sparked by John Allen's contributions to geography's adaptation of topology,[100] Müller suggests to read assemblage thinking and its potential spatial implication through the lens of a broader debate on non-metric concepts of space that is not limited to assemblage thinking but also includes geographic adaptations of actor-network theory and (as we will see later on) notions of relational space.[101]

In order to prepare the ground for topological thinking, Müller uses the picture of a handkerchief "whose ends, if laid out flat on a table, are far from each other but end up close together when scrunched"[102] – a picture that is already applied by Serres and Latour and, later on, taken up by Allen to understand the conceptual approach of actor-network theory towards "space".[103] If we abstract from the handkerchief, we get the idea of a flat grid evenly and potentially endlessly stretched in two directions (though the handkerchief, of course, has four edges). Every point of this structure is clearly defined by grid-related coordinates. "Scrunching up", then, means any *de*formation or *trans*formation of the primary structure of the grid by which distant points become contiguous or overlapping, and, consequently, the primary form is transformed into another. The general idea of transformation is intuitively accessible if we think of two- or three-dimensional forms as they correspond to the space of our experience. However, transformation loses immediate comprehensibility if expressed set theoretically, geometrically, or algebraically. Yet, a topological approach to space is utilized

99 Müller, "Assemblages and Actor-Networks", p. 35.

100 J. Allen, "Powerful Geographies: Spatial Shifts in the Architecture of Globalization", in: S. Clegg and C. Haugaard (eds.), *The Handbook of Power*, London: Sage, 2008, pp. 157–173; J. Allen, "Three Spaces of Power: Territory, Networks, plus a Topological Twist in the Tale of Domination and Authority", *Journal of Power* 2 (2009) 2, pp. 197–212; J. Allen, "Making Space for Topology", *Dialogues in Human Geography* 1 (2011) 3, pp. 316–318; J. Allen, "Powerful Assemblages?", *Area* 43 (2011) 2, pp. 154–157; J. Allen, "Topological Twists", *Dialogues in Human Geography* 1 (2011) 3, pp. 283–298; A. Latham, "Topologies and the Multiplicities of Space-Time", *Dialogues in Human Geography* 1 (2011) 3, pp. 312–315, at 313

101 D. Massey, *For Space*, London: Sage, 2005; J. Murdoch, "The Spaces of Actor-Network-Theory", *Geoforum* 29 (1998) 4, pp. 357–374; Müller, "Assemblages and Actor-Networks".

102 Müller, "Assemblages and Actor-Networks", p. 35.

103 For Serres and Latour, see Murdoch, "The Spaces of Actor-Network-Theory", p. 360; Allen, "Topological Twists", p. 285.

not to make the depth of a mathematical field productive for social sciences but to imaginatively oppose the idea of geometric space rendered in terms of Euclidian geometry. The potential abstractness of a topological notion is countered by a sensorial, perceptual grounding. Meant to capture "the disruption to our sense of what is near and what is far",[104] the topological imagination challenges the alleged hegemonic idea of geometric and topographic notions of space by claiming that a Euclidean, metric space is not the only spatiality geographers should be aware of. A topological approach is, hence, characterized by its opposition to metric space, or, more precisely, by the assumption that proximity is not determined by metric variables.

In geography, Euclidean geometry has broadly been associated with models of *metric* (or *physical*) distance, extension, dispersion, and (physical) limitation. Corresponding with a Euclidian approach to space, scholars have emphasized that the *measurement of space* and *governing via spatial means* have amalgamated in the specific form of a power technology pursuing the modern state.[105] Metric space, equated with the measured and mapped "territory", and "territory", equated with "space", per se makes metric space the hegemonic form of social spatiality. Concepts of metric space in this broadened sense offer a perspective on human action and social order that is limited by the question in how far metrics (distances, extensions, limits) could claim any explanatory power. And indeed, there has been a substantial critique even in the heyday of quantified geographical models operating in the logics of metrisized space with regard to the limited analytical range and potential reductionism of metric projections of social facts. A taken-for-granted conceptualization of space as metric space equated with territory, thus, has been blamed both for its (limited and even more) shrinking capacity to deal with the complexity of "real world" transformations as well as for its methodologically privileging sociopolitical orders that are built on absolute space, such as the modern nation-state.[106]

At this point, a topological notion of space provides, presumedly, a theoretical means to prepare ground for non-metric concepts of addressing social spatialities, which, as Latham postulates, "allows us to account for the complex orderings of

104 Allen, "Topological Twists", p. 284–290.

105 R. Sack, *Human Territoriality: Its Theory and History*, Cambridge: Cambridge University Press, 1986, p. 218; S. Elden, "Governmentality, Calculation, Territory", *Environment and Planning D: Society and Space* 25 (2007), pp. 562–580.

106 J. Agnew, "The Territorial Trap: The Geographical Assumptions of International Relations Theory", *International Political Economy* 1 (1994) 1, pp. 53–80.

everyday spaces in novel ways".[107] It is expected to free spatial reasoning from a preoccupation with – literally – *geo*metric space, that is to say points, lines, and areas projected on the earth surface, and, hence, to avoid a preselection of certain spatialities, such as the bounded space of the nation-state and its subdivisions. Indeed, the examples presented in the literature – for example, transnational social movements – emphasize a reconceptualization of space beyond the idea of territorial fixation and durability and, instead, shift towards the analysis of flexible alignments of distant elements without stepping into the trap of a binary opposition of "the global" and "the local".[108]

(1) Topology as diagnosis: The way topology is adapted by Allen implies that we are witnessing a fundamental change in society regarding its underlying spatiality. Whereas modern society – how vague and in need of explanation this notion may be – was performed through an absolute and abstract concept of space[109] epitomized in the fixed and distinct territorial geometries of nation-states that, in turn, became the hegemonic concept of space, today's world society works *differently*. Topology, thus, is assumed to be a/the contemporary spatial form of a globalized world. This notion of topology points to empirico-historical processes of transformation, through which established networks based on metric relations and territorial proximities are shattered and which networks arrive that are built on new forms of relationality. In this perspective, a topological or relational space is the result of seminal processes of transformation for which territorial forms of the social are mere legacies, as the following quote illustrates:

> The varied processes of spatial stretching, inter-dependence and flow, combine in situ trajectories of sociospatial evolution and change, to propose place – the city, region or rural area – as a site of intersection between network topologies and territorial legacies. The result is no simple displacement of the local by the global, of place by space, of history by simultaneity and flow, of small by big scale, or of the proximate by the remote. Instead, it is a subtle folding together of the distant and the proximate, the virtual and the material, presence and absence, flow and stasis, into a single ontological plane upon which location – a place on the map – has come to be relationally and topologically defined.[110]

107 Latham, "Topologies and the Multiplicities of Space-Time", p. 313.

108 Müller, "Assemblages and Actor-Networks", p. 35.

109 "An abstract space and time provide the economy with a powerful, practical, and easily manipulated framework to organize people and resources for a mass society" (Sack, *Human Territoriality*, p. 218).

110 M. Jones, "Phase Space: Geography, Relational Thinking and Beyond", *Progress in Human Geography* 33 (2009) 4, pp. 487–506, at 487.

Topology as diagnosis resonates with the third form of assemblage thinking by focusing on emergent effects of certain global forms crossing established boundaries and contexts through their abstractedness.

(2) Topology as methodology: There is, however, a second notion of topology at work in assemblage thinking that is distinct from its diagnostic claim. Topology also refers to the idea of relationality, which is as well present in relational geographies and especially in ANT, as Murdoch underlines:

> What ANT adds to the more commonplace understandings of relational spaces is a concern with network. While the term network is commonly utilised in social science to describe technological relations, economic forms, political structures and social processes, ANT uses the term in a way which is quite distinct from such applications. Or rather, it might be argued that ANT bundles all these network applications together for it concerns itself with the heterogeneity of networks; that is, ANT seeks to analyse how social and material processes (subjects, objects and relations) become seamlessly entwined within complex sets of association. This leads on to an interest in "network topologies", with the ways that spaces emerge as socio-material relations are arranged into orders and hierarchies.[111]

Here, topology does not serve to mark the gap between an already conventionalized territorial concept of space, on the one hand, and a newly emerging spatiality, on the other, but to blend the concepts of relationality and spatiality in one new conceptual approach that is called "network topology". This second notion of topology resonates with a broader strand of what has been called "thinking space relationally" and is already present in Jones' quote above – indicating that witnessing major transformation processes often come along with methodological changes, with none of them being superior to the other.[112] As "relational thinking" "dissolves the boundaries between objects and space, and rejects forms of spatial totality", he concludes that "objects *are* space, space *is* objects, and moreover objects can be understood *only* [all original emphasis] in relation to other objects – with all this being a perpetual becoming of heterogeneous networks and events that connect internal spatiotemporal relations".[113] Topology, here, refers to the form of social, economic, and political relations and arrangements that inherently (by definition) *is* spatial. "Scrunching up", then, promotes an existing form that can be rearranged with/without getting destroyed.

111 Murdoch, "The Spaces of Actor-Network-Theory", p. 359.
112 Jones, "Phase Space", p. 488.
113 Ibid., p. 491.

Both approaches have different consequences for assemblage as a heuristic: The former suggests to discuss formation processes with regard to their capacities to align and to transform practices and to drag "things" into new networks, irrespective of the sociospatial embeddedness due to the transcontextual portability of key features ("global forms") of the formation process (e.g. standardization processes and homogenization of norms). By applying the latter, the focus shifts towards an understanding of spatialization as an inherent quality of any kind of relatedness and relation-building.[114]

Making the Heuristic Productive for the Analysis of Processes of Spatialization: Some Preliminary Thoughts

Assemblage, indeed, is a playful conceptual world in which one can get lost. It can be mapped in different strands – not only the four I sketched in the first part – and even if broken down to a heuristic device as I suggested above, it is methodologically underdetermined and has ambivalent relations to any conceptual notion of "space". Despite the methodological concerns that I termed as underdetermination, based on a heuristic understanding of assemblage it could provide some useful starting point for further debates:

a) As the concept operates between a potentially overdeterministic assumption of stable structures and a similar problematic proclivity for fluidity and "pure potentiality",[115] it might serve as an approach to a closer examination of (in)stability and durability/ephemerality of entities. Formation processes are always nested in social practices; conglomerates of decisions and perceptions, rules, and norms; material objects and ideas; emotions and effects; as well as technologies and infrastructures. Here, a similar "open" concept supports a broader discussion how potentiality turns into actuality and back to potentiality again.
b) The concept might stimulate comparative analysis insofar as it allows the "mechanics" of formation processes of emergent entities to be dissected. As Collier and Ong demonstrate in their edited volume, seemingly different formation processes share certain key features, for example their abstractability,

114 See Jones, "Phase Space".
115 Anderson et al., "On Assemblages and Geography", p. 184.

allowing de- and recontextualization. The assemblage heuristic could, hence, be read as a comparative heuristic.

c) Assemblage thinking also serves to challenge established, conventionalized notions of space as a measurable, mappable dimension of social life and, instead, points to the temporality of these notions of space. However, in considering the parallels between ANT as well as relational geography, it echoes a broader debate on topology. In doing so, assemblage thinking complements a line of debate that has criticized a tendency to separate the social from the spatial.