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Im/mutable im/mobiles: From the socio-materiality of cities towards a differential cosmopolitics

Introduction: The problem of an undifferentiated socio-materiality

This chapter aims to provide one possible answer to a simple question, lying at the heart of this volume: How can we adequately theorize the built world we inhabit? In recent discussions, begun in the journal "City" in 2011, we were basically presented with two options: we could either think about this world in terms of "urbanisation" as seen from the viewpoint of critical urban studies, a world becoming more and more city like (Brenner *et al*. 2011). Alternatively, we could theorize it as a socio-material world in the terms of assemblage theory (Farías 2011).

While many in the debate agreed that a "socio-material" theory can be a fruitful way to think about the built world, I share Hilary d'Angelo's observation of this debate, that we deal here with a „somewhat chaotic category of 'sociomaterialities'" (Angelo 2011, 570). This "chaotic category" largely suffers from the problem that many studies on the urban as socio-material show that the urban is somehow socio-materially constituted but struggle to find meaningful further distinctions. d'Angelo further observed that the problem of such undifferentiated socio-materiality was based in the assemblage urbanists "presuming agency, and fetishizing the sociomaterial itself", while the critical theorists "prematurely circumscribe it" (Angelo 2011, 572). As she rightly states, the question is to „identify the relevant differences between objects, now that we have shown their ontological similarity" (Angelo 2011, 575).

This essay then attempts to elucidate some "relevant differences between objects" with regard to how they locate social processes. My answer aims to observe the patterning of different kinds of objects and more specifically, how their relations change over time.

My main departure point is to go back to the original ideas of ANT about technologies, or "immutable mobiles", and *compare* these to other things. Such a comparison serves to avoid two pitfalls. First, it avoids to assume that ontologies are contingent for each thing. Rather, as I aim to show, we can distinguish different kinds of socio-materialities that are relevant for the study of urban assemblages. Second, it avoids to presume the existence of cities and its other as a-priori relevant objects of analysis.

Regarding the first pitfall, this route follows a different path than many recent "ontological" studies within STS, whose main goal was to demonstrate the multiplicity of objects (Mol 2003) or material politics (Marres 2013). Such studies engage primarily in a discussion about the relationship between things and politics and between epistemology and ontology. Yet

what I am interested in here is in the situated and historical differences between large-scale *classes* of socio-materialities. [1] This does not imply, as with traditional ontology, that such differences reside within things. These differences among the socio-materialities are a result of their combined historical and situated materiality, their historical and situated use and the historical and situated discourse about them.

Regarding the second pitfall, looking at cities rather obfuscates our lens, if our interest is in "socio-materialities," as it pre-establishes a difference between cities and its other, be it nature, the rural, or the sub-urban. Following established routes of ANT and assemblage theory, I suggest not to start by taking cities for granted as objects, but analyse how our world is *patterned* as a socio-material world. Whether the relationships between different kinds of objects tell us something about the difference between the urban and its other becomes an empirical question then.

This is a similar move as ANT and other constructivist theories have been pursuing for various other objects such as for sex and gender and which we can call, following Ian Hacking "historical ontology" (Hacking 2002).

Locational patterning in a nutshell occurs because different kinds of objects have different properties to locate social practices. Building types, such as churches are one kind of locational patterning, while infrastructure networks (such as roads or water pipes) create a different kind. What is changing over time is the nature and relationship of such different kinds of locational patterning. For example, as I will show, buildings as types have become devalued and become replaced with technologies.

Such changes are difficult to describe and to analyse, as they do not emerge necessarily from the proliferation of particular objects. In particular, buildings do not change that much, but their role as locational objects changes because their use as and their relationship to other locational objects changes. Such changes set condition how we live in a built world. It changes the conditions under which we produce a specific kinds of living together. This is what I call a differential cosmopolitics.

My argument goes as follows: I start by outlining the problem of spatial neighbourliness for ANT: ANT is based on an idea of translation, but spatial neighbourliness does not indicate translation. From there, I begin theorizing the form of what I call the techno-morphologies of society as the changing relationship between different kinds of socio-materialities. Beginning with the well-introduced idea of immutable mobile, I proceed to discuss mutable mobiles, infrastructures as immutable immobiles, and buildings as mutable immobiles. The remainder of the article focuses on various transfers between these four forms of socio-materiality. I discuss the question why ANT created so much critical resistance in the field of science, but was embraced in the field of architecture and design. Finally, I discuss two recent morphological shifts that both move away from the modern idea of buildings as mutable immobiles.

ANT and the problem of spatial neighbourliness

If we want to theorize (urban) cosmopolitics, then how do we begin? To recap, by cosmopolitics Isabelle Stengers understood "the construction of a common world", where cosmos refers to "the unknown constituted by … multiple, divergent worlds and to the

articulations of which they could eventually be capable" (Stengers 2005, 995). Cosmopolitics then refers to the building of our worlds and how we can collectively re-negotiate it. In line with the topic of the book I suggest to inquire the socio-material conditions of such re-negotiations. In particular Simmel already pointed to "cities" as the places that create such particular conditions (Simmel 1993). For Simmel, the main element was the fact that the metropolis contributes to the production of humans as "Unterschiedswesen" (Simmel 1993, 116), literally as differential beings, as people who saviour and cherish and produce differences. Simmel already understood that such differential beings are made and enacted by "each crossing of the street", or in other words, ubiquitous socio-materialities (Simmel 1993, 116).

The editors of this volume suggest focusing on a variety of "configurations". To recap, these configurations are agencements, as the relational constitution and political effects of (urban) technologies, infrastructures, and other material-semiotic agencies; assemblies as the coming together of new (urban) concerns, constituencies, and publics and atmospheres as the coalescing of (urban) practices into shared spaces of co-existence, life-support, and survival.

These configurations in my view deserve attention from a cosmopolitical perspective, but not so much because they are particularly urban. What then is specific for such configurations? What makes them the concerns of this book and what makes them different from other more classical concerns of ANT is that these relate to *spatial distributions*. These spatial distributions relate to material infrastructures and social forms that are not necessarily related in terms of translations, but *locations* (see also the introduction to this volume). In simpler words: what happens in a square or in a building may be established and made possible by the socio-materiality of this square or that building. Yet we cannot necessarily describe it as an actor-network, understood as a set of translations emerging from intervening actors. As Bruno Latour insisted, "a network is a concept, not a thing out there"; the logic of networks is not spatial, but translational (Latour 2005, 131).

Mol and Law have pioneered under the heading "topologies" a set of inquiries that aimed to square a spatial logic with the logic of actor-networks (Mol and Law 1994). Their interest was getting hold of socio-material processes that could not be described as networks, because there were no identifiable centres of translation (Mol and Law 1994, 661). They have pointed to the salience of neighbourly logics of "regions" and "fluids." Anaemia, in their case, was a fluid, because it could take on various guises in different circumstances. A fluid for Mol and Law implies that, as in their case, material infrastructures and stabilizing practices are *absent* that would create centers of translation and calculation. Here, I wish to go one step further and re-connect these observations with the material substrates that make villages, towns and cities, all the things that materially locate interactions in space.

What differentiates the case of what happens in towns from anaemia is that in the former case such unpredictability and changes of form can happen even in the *presence* of centers of calculation and translation.

To understand this difference, we need to pay attention to the position of the observer. The concept of translation implied that the researcher would "follow the actor". "Following the actor" to cross time and space was one version of a typically modern move of social theories

to abstract social relations from spatial neighborliness (and insert them somewhere else) (Mol and Law 2001).

But to understand the properties of spatial patterning we stop moving and following the actors. Describing what happens on a square is an effect of a panoramic view enabled by locational stability. This methodological shift is tied to its object, urban cosmopolitcs: because the creation of living together in a town or city is an effect of *situational creation* based on what is here, an effect of Simmel's "crossing the street".

It is very much the fascination of squares that it is unclear to an observer how various elements relate to each other, and how they locationally co-exist, often without even noticing each other. Indeed, from the viewpoint of ANT it is easier to follow the cardigan of a passer-by to its factory in Bangladesh, than to analyse what the relationship is between this person and the person sitting on a bench she passes by.[2] The problem of analysing a square, a building, or other forms of spatial neighbourliness is not that we would ignore its socio-materiality, but that the socio-materiality of a building or a square differs from the logic of translations.

Understanding changing morphologies: Im/mutable Im/mobiles

To analyse spatial neighbourliness I suggest to better understand the difference between traditional objects of ANT and buildings and squares and analyse their relations. We can thus analyse what I call the morphology of socio-materialities. We can directly lift this from, surprisingly, Durkheim's ideas about social morphology, and simply drop his notion of "social". Durkheim notes that social morphology changes "depending on the way in which the cities and the houses are constructed; depending on whether the space occupied by the society is more or less extensive; depending on the borders which define its limits, the avenues of communication which traverse it" (Durkheim 1978, 88).[3] What matters here is the focus on relational, and historically specific socio-material forms. These forms, and here we have to depart from Durkheim, are certainly not hidden and need to be detected, but they are the very forms of how we live together.

The morphology comprises the collective of *relations* of material-semiotic stabilisation and locational anchor points for social processes. A locational anchor point can be a tap that locates the possibility of drinking water, a stone that allows sitting down, a (cell-) phone that allows making a phone call, or a court that allows a trial in a specific location. These examples also indicate that anchor points differ very much in how they are connected to a specific location and whether and how they are part of an actor-network. A stone may be movable and does not rely on a network, whereas a tap depends on its connection to an infrastructure network of water pipes and cannot be moved without changing the infrastructure network. The morphologies are much more than simply "material-semiotic". They are not a unified thing, but rather fractured and very complex. Furthermore, these morphologies describe historically specific patterns. The construction of our world is defined by how different kinds of objects are distributed and interlock. In the remainder of the article, I will try to describe the basic patterning of our world and hint at some recent changes to the patterning. What we can observe is basically a shift from a modern world in which patterning is established through typified buildings connected to material infrastructures to a world in which building types are replaced by locational technologies. At the same time, we can

observe a romantic counteraction that seeks to replace such locational technologies with interactions.

For the following analysis I suggest to analyse different kinds of things that create such morphologies along the axis mutable/immutable and mobile/immobile which was essentially established, but not pursued by Latour when he created the notion of the immutable mobile (Latour 1987, 226). I suggest looking at the different kinds of things by comparing the way they are predominantly conceived in theoretical and philosophical discourses, what kind of agency we can ascribe to them, what constitutes crisis for these things and how law conceives of them. The first axis, philosophy, refers to kinds of questions and viewpoints under which these kinds of objects are traditionally framed by various theoretical discourses. It points to the fact that preceding any re-analysis through ANT, different kinds of things come with their own framing, but this framing continues to exert its logic even within assemblage thinking. The second axis asks how this generic viewpoint relates to a particular kind of socio-material agency in order to specify the object in an ANT language. The third axis, asks for an attendant crisis that allows revealing these underlying logics. This follows the established route by ethnomethodology, workplace studies and ANT to understand stability through its opposite. The last axis, legislation, refers to the political and legal processes that aim to deal with these kinds of crisis.

Table 1: kinds of modern agencements: im/mutable im/mobiles

	Immutable	Mutable
Mobile	**1. Technologies** (air pumps) Philosophy: Epistemology, Causality, Probability Agency: distributed in actor-network Crisis: Breaking, Accident Legislation: Risk	**2. Things, Plasma** (stones) Philosophy: Ontology Agency: resides with things Crisis: Sudden movement (natural disaster) Legislation: None, re-categorisation as technology
Immobile	**3. Infrastructures** (sewage pipes) Philosophy: Theories of Justice Agency: Distributed in Actor-Network Crisis: Diffraction Legislation: Standards	**4. Buildings as Types** (Court) Philosophy: Aesthetics, Semiotics Agency: Distributed, but not in Actor-Network, due to a multiplicity of interfaces Crisis: Change of Use, Typelessness Legislation: Building Codes, Zoning

Actor-Network theory has historically been based on the elaboration of one particular type of such stabilisations, namely what Bruno Latour called "immutable mobiles" (Latour 1987, 226) or, in other contexts, black boxes (Latour 1987, 81), or what I would simply call technologies. Immutable mobiles are mobile technologies that allow the standardization and reproduction of actions in different places. Immutable mobiles are objects that are stabilised by actor-networks. Immutable mobiles, in short, are highly modern objects, dependent on science to invent them, metrologies to measure and standardize them and standardized production lines to bring them into being. Because technologies stabilize processes and make them predictable, they have the unique feature that they can break. A broken immutable mobile does not allow reproducing a process somewhere else. It becomes unusable. It needs a repair technician to get working again.

The established theoretical discourse on technologies is primarily based on questions of epistemology: How can we know whether a driver or a malfunctioning brake caused a car crash? The main concepts here are centred on notions of causality and probability. Can we establish a causal link between the manufacturer, the car and the injured person? Or can we establish a probability relationship between types of cars and how often they crash? Such thoughts find their equivalent in legal concepts of risk. The concept of risk connects the actors at one end of an actor-network to whatever is the result of a technology. It is in this triangle of technology, causality and probability, and risk where most classical studies of ANT operate. This discourse as a modernist discourse sought to attribute cause and blame to one side of the equation. ANT intervened in this discussion by explaining the outcome through distributing agency through a network.

Despite the primary focus of ANT scholars on technologies, these describe hardly the only kind of socio-material agency. What other kinds of objects can we discern then?

First, there are a number of concepts to describe mobile objects that are part of strong networks. Latour himself has called the socio-material background of society "plasma." For Latour, Plasma is "that which is not yet formatted, not yet measured, not yet socialized, not yet engaged in metrological chains, and not yet covered, surveyed, mobilized, or subjectified" (Latour 2005, 244). Plasma is not the same as the earth in the era of the anthropocene. More than a clear object, it is a category of leftovers. It designates whatever has not been rendered entirely technological. But like the earth, plasma is a category of the socio-material that is not translated into an actor-network, but rather stays in the background.

Similarly, the fluids, or mutable mobiles described by Mol and Law above similarly are not objects in stabilising networks. (Mol and Law 1994). Such objects do not make actions reproducible. Rather, they have varying effects and meanings, depending on their use. Stones and sticks, rubble and eggs, water. These are not technologies, but things that do not specify their use. They are mobile, but they do not depend so much on actor-networks. Mutable mobiles also do not really break. A Stick can literally break in two, but it can still be used to do largely what it did, when it was one piece. A CD-player, once broken, does not.

A further variation of this theme comes from Nigel Clark who has shown in his book on "inhuman nature" that the focus on network building does not elucidate the materiality of the earth and sea, including its movement, such as earthquakes, bushfires, volcano eruptions and tsunamis (Clark 2010). The earth as we inhabit it, now known as "anthropocene", is not just a

natural object that exists independent of social shaping. It is thoroughly socio-material. But it has been shaped over a very long time and its shape and its movement are not planned, it has no bounds, and it is impossible to delineate a network and it is a nature that can create havoc on society that is entirely different from breakdowns of technologies that can be repaired: "Natural disasters" are not a bug, they are a feature of the earth. They do not indicate that something that we humans have produced is broken.

The typical discourse around mutable mobiles, plasma and the anthropocene is a discourse of ontology. Such discourse asks: What is fire, the earth, a stone made of? It does not focus on the engineered connections between actants, but on the qualities of each thing, as it exists prior to being connected and translated. Unlike the discourse on technology, there is no attendant legal discourse connected to it. The anthropocene is no legal object. In the case of natural disasters, fire, water or stones cannot appear as objects of regulation. If natural disasters become embroiled in legal and political proceedings, a shift from things to technologies and infrastructures occurs (Guggenheim 2014). The thingness of fire, the water or the earth is turned into a technological problem that connects these things to dams, power plants or buildings. Thus, for example in the case of Hurricane Katrina, the construction and eventual breaking of levees became the focus of a controversy (Wetmore 2007) or in the case of the Chilean Tsunami, the functioning of a warning system (Farias 2014).

These three kinds of socio-materialities, the earth, plasma and mutable mobiles already help us to delineate what is left out of classical ANT ideas of socio-materiality. With their help we have created a bracket around the built environment. On the one hand, we have the non-human made, the non-designed, the earth, and its myriad of things, stones, water drops, mountains and heaps of sand and so on. On the other hand, we have technologies as immutable mobiles, the small objects designed to stabilise interactions over distance, the thermometers, train tickets and drinking straws. In between, there is the built world. As mentioned before, the built world is not the same as cities. The built world extends to wherever humans live.

The built world is an assemblage of things that allows locating various social practices. Houses, roads, paths, stadiums, and towers. Whether we can observe a difference regarding the socio-materiality of cities versus the rural or suburban is an empirical question, not one that can be answered in principle (Krause 2013). From such an morphological perspective it is not very relevant to observe "urbanisation" or to describe certain places as cities or villages, but rather to observe the changing patterning of the built world. We thus need to understand in more detail how the built world is patterned. To do so, we need to analyse in more detail the two positions left in the table.

Technologies are mobile, yet there are also immobile technologies, and these are usually called infrastructures. Infrastructures are by and large technologies that are not only immobile, but also connected into literal networks of tubes or cables (not actor-networks that do not consist of material objects that are connected to each other). Infrastructures are immobile for the very reason to make something else mobile, both the very things it transports, such as electricity, sewage or water, but also to allow the circulation of other elements that are now unburdened with carrying what the infrastructures carry (such as humans, who do not need to carry buckets full of coal, once gas pipes are in place).

The discourse about infrastructures is not the same as the discourse on technologies. Because infrastructures are potentially all inclusive, the central topos to discuss infrastructures is one of distribution and equality (See McFarlane and Lancione, in this volume for an example of the inequalities produced by the exclusion from water infrastructure). The question that sticks to networks of sanitation or electricity is not primarily whether it works, but whom it covers. The inclusionary notion of infrastructures stops where it meets the technologies that connect the infrastructure to human needs: The water pipes that connect toilets are the same, yet toilet bowls themselves come in huge varieties, showing the tastes, cultures and status of their users. The data sent through phone lines are the same, yet cell phones and telephones come in all shapes and forms.

Infrastructures are technologies of inclusion, and as such, highly political. It is precisely because infrastructures are immobile that it matters so much where they go to and where they don't. As a legal problem, they are primarily objects of standardisation. Standardisation not only allows for potentially endless extension, but it also secures that infrastructures are not just inclusive, but inclusive to the same level of provision.

Finally, there are mutable immobiles, or in other words, buildings understood as building types. Buildings understood as roofs and walls, are infrastructures, a sequence of immobile technologies that shelter humans from the elements. Yet buildings as building types, such as sports stadia, banks, or museums have a very different relationship to social processes. As mutable immobiles, buildings provide touch points for functionally specific processes, but they do so without being technologies (Guggenheim 2009a). Buildings as building types are unique objects that do not depend so much on their technical properties (their walls and roofs), but on a secondary category, attached to this shell. The curious thing about building types is that these are not technological. It is not even clear how a building becomes a building type. Type is a most elusive quality (see Franck and Schneekloth 1994 for an overview).

For this reason, most discourse on buildings as types is semiotic. It is a matter of reading and interpreting what a building does, not of establishing causality or probability. This is not to say that architects have not aimed at turning types into technology, but aiming to do so has never really succeeded (Guggenheim 2013a). The situation of crisis for building types does not occur when they break, as they cannot break, but in cases of change of use. Change of use is the situation when typeness of a building is changed, either by particular kinds of interactions, or by material means. The legal discourse on buildings is written into building codes, laws that determine how buildings need to be built to allow certain interactions to happen (Guggenheim 2009b).

The table suggests that it operates on a properly essentialist basis, taking intrinsic features of objects to locate them in the table. Yet this is not so, and this is why I follow Hacking in calling the approach historical ontology. Genes, for example, have moved from being things to becoming technologies. With the development of genetic engineering, genes have stopped to be natural kinds and have become technologies, and accordingly they are now regulated with specific laws that pertain to notions of risk. Buildings on the other hand, emerged as types only in the 19th century and were subsequently mainly understood to be technologies and came to be understood as mutable immobiles since the 1970s (Guggenheim 2013a). There is an important difference here between buildings and genes: Genes became technologies

because they could actually be manipulated at some point: their travel from one category to the other is prompted by a change in their physical make-up and the development of a particular set of technologies that allows to turn them into technologies themselves. Buildings, on the other hand, have always been mutable immobiles (change of use has always occurred), but the discourse did not thematize this until the 1970s (Guggenheim 2013a).

Critique and differential cosmopolitics

The first issue that I would like to discuss based on such a differential cosmopolitics is the issue of critique. The recent disputes on assemblage urbanism have resulted in critical urbanists accusing ANT of being uncritical (Brenner *et al.* 2011). Such a claim is based on the idea that critique is based on a critical vocabulary, which explicitly aims at unmasking other truth claims (Boland 2014).

But we could say such an idea of critique is intentionalist, rather than consequentialist. A look at the history of the social sciences shows that critical intentions are not the same as critical effects. A good example is science and technology studies and ANT itself, and the various ways it has portrayed its main object, the natural sciences. In what was called the science wars, natural scientists did not object so much to an explicit critique of the natural sciences, but its constructivist *description* (Labinger and Collins 2001). The effect of critique was a result of a difference between the self-description of the natural scientists and the description of social scientists. Such a consequentialist notion of critique suggests that critique is not a use of a specific discourse but a tension between a self-description and description by others.

Such critical effects of ANT are notably absent when ANT is engaged in architecture. Indeed, if anything ANT is embraced by architectural theorists, architects and planners. Texts on ANT appear in architectural publications (Fallan 2008, Latour and Yaneva 2008) and Bruno Latour could even write a column in Domus, a popular Italian architectural magazine, without stirring any controversy. Even if we do not buy into the intentionalist logic of the "critical" urban scholars, it is puzzling that ANT does not have critical effects within the field it observes, but rather from competing external observers, namely critical urban sociologists and geographers. How can we explain this?[4]

To understand this difference between the effects of ANT as applied to science and ANT as applied to architecture, I suggest looking again at the difference between buildings and things.

ANT, as a version of STS, looks at the production of things by scientists. For STS, the main point is to show that things and human kinds are (socio-materially) produced and enacted. This observation of production and enactment is put strategically against the self-description of scientists (and naturalist philosophers of science), who claim that they only describe what exists, rather than (co-)produce their objects. The critical effects of ANT as STS come from this difference in accounting for the ontology of things. Scientists understand STS descriptions as critique because it attributes agency in different ways. From the viewpoint of scientists, the agency, if any, is with the natural kinds. In Ian Hackings parlance, for scientists, things are natural kinds. Hacking would say, adapting a phrase of G.E.M Anscombe, that such things exist independently of a description: "what camels, mountains, and microbes are doing does not depend on our words" (Hacking 2002, 108). The properties of things are thoroughly in the realm of ontology, traditionally understood. These properties *precede* the descriptions

of scientists and the agency of these things is independent of the descriptions of scientists. Whether someone gets hurt from a falling stone is independent of a scientific description of a falling stone.

The main move of ANT (along with other versions of STS) has been to move the category of things closer to the category of technologies. For ANT, the ontology of things resides not exclusively within a thing, but becomes entangled in an actor-network. As an entanglement in an actor-network, the agency moves away from the thing and becomes distributed among many actors including the scientists themselves. As we can see from the table above, this moves things into the space of epistemology and notions of risk. In the famous example given by Latour, whether Ramses has died of tuberculosis is suddenly a matter not only of the bacteria and Ramses body, but of the entanglement of these two entities with the development of modern medicine and the description and classification of diseases (Latour 1999).[5] As noted above, this shift from things to technologies is both a strategic shift of ANT as well as an empirically observable shift of various things that do indeed become technologies (such as genes).[6]

But buildings and assemblages of buildings and infrastructures such as towns, cities, villages, are unlike natural kinds. They are constructed and architects and planners *aim to make them have effects*. They hope to endow objects with agency, and they aim to have the representation precede the effect (Doucet I and Cupers K 2009, Picon A *et al*. 2009). Architects would like buildings to be entangled in actor-networks with architects at the strong end of the network. In their view, buildings are technologies. Their own self-description fits exactly the description that ANT gives of the practice of scientists (that scientists themselves find objectionable). For architects, an ANT description of what they are doing is unlikely to create a tension with their self-description.[7]

Further, it is part of the self-understanding of architects that buildings as constructions are supposed to have effects based on a confluence of multiple elements (legal, aesthetic, material, economical etc.) and have multiple effects.[8] There may be an internal debate within architecture about whether and how much the practice of architecture should focus or exclude some of these considerations, but this debate exists precisely because there is general agreement that buildings do have multiple effects.

Returning to my categorisation above, architects would like buildings to be proper technologies. For most architects, the worst that could be said about a building, is that it does not have the effects architects would like it to have. To put it differently: scientists' relationship to their objects is descriptive, while architects relationship is projective. They want buildings to be technologies, not things.

This situation seems to resemble the situation of STS with regard to engineering and technology, whose relationship to their objects is equally projective. STS began already during the 1980s to analyse technologies and engineering (Woolgar 1991). But there is a crucial difference here: STS scholars description of engineering did create critical effects, but not because they disagreed about the effects of technologies. What became a topic of debate, was the question *why* technologies work and *how* they evolve in the ways they do. STS scholars sought to show that the invention and production of technologies is "shaped"

(MacKenzie and Wajcman 1985) and "constructed" (Pinch and Bijker 1987) by social and political forces. This argument was opposed to a theory of engineering that saw the projections of engineers as politically innocent, neutral and inevitable. But in the case of architecture what is at stake is not the neutrality and inevitability of architectural designs, but the question whether their effects have anything to do with what the architects would like them to do.

Given this analysis, if ANT *wanted* to create effects of critique, then ANT descriptions of what architects do are unlikely to produce these, as such descriptions merely reinforce architects self-image as designers of technologies. To create a tension with the self-descriptions of architects, ANT would need to go a different route. Rather than shift the object away from its place in the table towards technologies, as in the case with things, it would need to insist on its proper place in the table. In other words: To surprise architects we need to tell them the world is like natural scientists believe the world is: buildings do whatever they do not because they are *constructed* in the way they are, but because of their continuing existence, not so much because of the projected agency of the designer, but the ongoing agency of users, caretakers, cleaners and owners. Such existence, largely excluded from architects writings and interests, includes use, maintenance (Strebel 2011), decay, change of use (Guggenheim 2013b), preservation (see Göbel, this volume), and demolishing (Brand 1995). By this, I am not claiming that the work of architects has no effects, or never the effects they are claiming, but that to criticize them with classical ANT descriptions, to claim that their work has socio-material sources and consequences is not effective as critique.

From this observation does not follow a plea for a critical socio-materialism in the intentionalist critical tradition. Such a view, by shifting the agency of buildings away from their materiality towards economic processes does indeed challenge the architectural idea of agency of buildings. But it does so by placing it behind the architects back and at the expense of the socio-materiality of buildings. Rather, I suggest distributing agency into the hands of everything in front of them, both in a spatial and temporal meaning. Spatial in the sense of whatever and whoever operates with the buildings and temporal in the sense of whatever happens after they are built.

A Romantic and a Modern Morphological Shift

In the remainder of the chapter, I would like to briefly point out two recent morphological shifts. These shifts together do amount to a further challenge of the agency of buildings, but not as a critique of architects theories of buildings, but through morphological changes. The first refers to the fact that buildings become replaced by locational technologies (from field 4 to field 1). The second refers to a movement away from buildings as types, towards interactions without buildings (from field 4 to field 2). Taken together, these two moves indicate a dissolution of the modern idea of buildings as mutable immobiles.

To understand these moves, it is necessary to remember what could be called the modern morphology. In this modern settlement, the four fields of the table are neatly arranged in patterns, creating the cities and towns and villages dotting the world. A village, town or a city, according to this settlement consists of buildings connected by infrastructures (Tepasse 2001). These infrastructures not only form settlements, but connect settlements and even remote buildings into a single network. The buildings themselves provide locational touch points

within these settlements for a wide variety of functionally specific interactions. These functional interactions are regulated by zoning laws, which connect built structures to buildings. This modern settlement is of relatively recent origin and has only emerged in the 19th century with the emergence of the notion of type (Teyssot 1988), an attendant emergence of a wealth of new building types (Markus 1993) and later on, laws to standardize and regulate these types.

Hollow Atmospheres and the Technification of Locational Functions

The first element of a changing morphology is what I suggest to call the emergence of the locational functions without atmospheres. Examples for such locational functions are ATMs, vending machines (for condoms and sex toys in public toilets, for food and drinks almost anywhere, for syringes in public squares, for art) (Segrave 2002), cafes in bike stores, exhibitions in public spaces such as "art windows", praying points in places that are not churches, so called baby-flaps to dispose unwanted newborns in blocks of flats.

To understand the problem of the technification of locational functions, we need to return briefly to the idea of building types. As types, buildings *as wholes* locate certain specific social functions. Banks locate "doing a bank" and family homes locate "doing family". It is very much part of the notion of building type that it does not specify what role individual building parts play in doing x. This is not a failure of architects, or the notion of type, but it is very much part of the buildings as mutable immobiles. The reason for this vagueness of building types comes from the multiplicity of interface points a building offers for any kind of interaction. A "family home" offers potentially endless points of finding and doing "family", from its outer shape to spatial partitioning into bedrooms and bathrooms, to the design of particular elements such as a shower or a storage space to paintings and signage. "Atmospheres" are crucial notions here as they indicate the *confluence* of all these elements into one singular bodily experience that integrates all these elements (Boehme 1993, also see Göbel in this volume).

Hollow atmospheres splice this confluence up in particular ways. All these technologies re-define the relationship between buildings and interactions: First of all, these are all *locational* technologies. They do not abstract interactions from locations, such as cell phones with banking software does. An ATM or a vending machine is tied to a place, and forces the user to go to this place to do whatever these machines enable to do. The reason these are locational technologies – and not digital - derives from either of two problems: Human bodies, which move around have needs that cannot wait or these technologies distribute physical objects (or both).

Second, these are technologies, in the narrow sense used here. These are not instances of change of use, in which a building is changed in its use in a large-scale mode, with a strong emphasis on interactions and built interventions that *override* pre-existing typological elements, although sometimes the distinction between hollow atmospheres and change of use may be blurry.[9]

Locational technologies operate by ignoring buildings as types, and indeed, by using buildings as nothing more than shells or containers to perform their locational function. They do this by reducing what buildings as types performed to its technological core, and disposing

all atmospheric, but also room-based elements. For example, an ATM reduces the practice of "doing banking" to an exchange in which personal data of a customer are traded with bank notes. It sheds the face-to-face meeting between clerk and customer, it sheds the teller window and all its attendant security mechanisms, it sheds the barriers that direct customers into the right queue and it sheds the back-offices and the toilets and staff-break rooms. Some of these elements still exist – somewhere, in a non-descript office building – others are no more needed at all.

The "atmosphere" of banking, understood as a confluence of various elements is not just changing in the case of locational technologies, but simply inexistent. The building to which locational technologies are attached has no obvious connection to the locational technology. This has wide-ranging and little discussed repercussions for our understanding of society: buildings lose their athmospherical connection to what is happening in and around them.

Assemblies beyond buildings

The second change of morphology is both a reaction to, but also made easier by the first. A common observation about contemporary locational practices refers to the fact that the internet delocalizes the world (Crang 2000, Kitchin and Dodge 2005), and in particular it removes various interactions from their connection to particular buildings. It removes practices such as shopping from stores, political protest from squares and praying from churches (while giving it other, spatial equivalents (Crang 2000)). This does not mean that space becomes unimportant or that society is in any way less spatial, but it makes various interactions independent of specific buildings, it does away with even the technification of locational functions, at least when they do not depend on human bodies or physical products being exchanged.

Against such apparent delocalisations emerge forms of assembly without buildings, or what Salmond called "momentary communities" (Salmond 2010). I am thinking here of flashmobs, botellones, holiday camps, protest camps, open-air festivals, and in its most pronounced version, temporary gatherings such as Burning Man (Gilmore and Proyen 2005, Chen 2009). In the literature on such momentary communities, there is usually a stress on how locational digital technologies are used to coordinate these events (Gordon and e Silva 2011, Wilken and Goggin 2013). The argument is based on the assumption that digital media are devoid of places and from there point out that new technologies need to bring back locations. However, when we ask what these events replace, we could rather say that they replace existing forms of locating interactions through squares and buildings. All these events are predicated on the idea of creating temporary locations devoid of infrastructure, and devoid of building types as stabilisers.

They appear as romantic counter-practices to the modern logic of buildings as technologies (see Estalella and Corsin Jimenez in this volume for a case study). Buildings, seen through the light of these practices appear not as enabling of societal practices, but as restrictive. Through negation, these practices aim to highlight that modern society has created a fit between rules and its locational technologies.[10]

Rather, they seek to return to seemingly primary locational technologies of stage and centre, of paths created simply through the patterning of tents. As is most obvious in the case of

Burning Man, such events cannot escape the very logic they would like to transgress, of planning codes and its functional logics, of money and payments (and ways to create or transfer money). But they at least create a fiction of detachment from functional systems and specifically, of its infrastructural and building related supports. They create an atmosphere in which interaction is seemingly not mediated by buildings, but predicated on face-to-face-ness, on density and on chance. The attraction of Burning Man is not just to bring like-minded people together, but also to create a social form that pretends to minimise its dependency of locational technologies and mutable immobiles.

As such, these practices resemble very much classical sociological definitions of the city as a way of life, as a place to meet strangers, yet they do so in the desert or farmers fields. They are attempts to re-create the features of a city without infrastructure and buildings. Referring to the scheme above, we could say they aim to move located interactions from mutable immobiles to mutable mobiles, plasma and things.

Conclusion

In this article I have tried to come up with a way to analyse socio-materialities that allows to frame recent changes of morphology away from the urban-rural distinction. I have introduced some concepts to discuss the changing patterning of different kinds of socio-materialities. I have ended by describing two shifts that are about to create a different kind of morphology: the technification of locational functions and assemblies beyond buildings. They are indicative of two tensions that tear apart what is still an underlying agreement about modern patterning. But each of them also allows us to see the modern settlement afresh. The modern settlement was never the horror dreamt up by modern urbanism, because, as should have become clear, buildings as types do not lend themselves easily to become proper technologies. But at the same time, the modern settlement also gave rise to a particular kind of arrangement of material agencies, in which multiple objects interlocked, without prioritizing a particular kind of material agency. Modern cosmopolitics implied a precarious alternation and correlation between relying on things, technologies, buildings and infrastructures. The two shifts indicate that this precarious alternation is falling apart.

On the one hand, buildings lose their typeness and become mere shells. All locational work of the type is replaced by technologies. This has the effect that large-scale patterning is atomized into its constituent parts and at the same time every building seems to technically mimic the totality of locational functions. Whether a building is notionally a bank, a church or a supermarket matters less and less, as ATMs, prayer rooms and vending machines appear in buildings of all types. Building a common world tends to lose its footing in buildings. Architecture, as a form of creating a shared world and locating specific kinds of interactions, matters less and less.

On the other hand, assemblies beyond buildings strive for the opposite but achieve something rather similar. In the first instance, the dream of getting rid of modernistic constraints in the first instance becomes possible because of ubiquitous technologies that allow to quickly co-ordinate large numbers of people. The idea that the absence of concrete implies an absence of rules and constraints furthermore ascribes too much agency to buildings and not enough to interaction rules. It runs the danger of misunderstanding a particular kind of material agency for a change in social form.

What we have seen very little recently, unfortunately, are attempts to recreate the shape of modern villages, towns and cities in different and novel ways, in ways that would not bypass buildings but recreate the interrelationship of buildings and technologies in novel and exiting ways. This is both a result of a total loss of belief in large scale planning, while at the same time restricting what is possible with legal regulations that constrain what has become an empty shell anyways. Maybe we will see sometimes the return of architectural utopias.

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[1] As a strategy of theorizing, I follow Philippe Descola in his attempt to rewrite nature/culture, but rather than analysing how different groups conceive of this distinction, my aim is to analyse western ideas within this distinction (Descola 2013).

[2] For an attempt to study such open spaces see (Kärrholm 2008).

[3] My approach should not be confused with what is known within architecture as the various schools of "urban morphology", who study the patterning of buildings within cities. These schools though show no interest for the problem of socio-material agency. For an overview see Moudon (1997).

[4] An uncharitable explanation would be that the discourse within architecture has for a long time now been one of embracing and mimicking whatever is en vogue in other fields and that the uptake of ANT within architecture is not a sign of positioning, but simply of parroting what has become fashionable elsewhere.

[5] This is what Sismondo calls the post-Kantian preference of representation over effects (Sismondo 1993).

[6] Writing from the viewpoint of historical ontology, we could say that the emergence of ANT and STS more generally as a descriptive shift from things to technologies is a result of this actual move of things that increasingly become technologies.

[7] Though note, there are rare, but nevertheless very interesting examples of architects who did not imagine buildings as technologies, such as for example Cedric Price (Price *et al.* 2003, for a discussion, see Guggenheim 2013a).

[8] To give a most basic example of this self-understanding, the prospectus to study architecture at ETH, one of the worlds top architecture department states: „Architecture is concerned with the search for creative solutions in the field of tension between construction, the satisfaction of living and working needs and the preservation of a livable, designed environment. … [Architects] respond to social, economic and environmental changes." The BA course includes lectures on urban design, physics, architecture and art, economics, sociology, and law among others. http://www.arch.ethz.ch/en/studium/studienangebot.html .

[9] Note that this is different from "multi-use" of historic buildings such as churches (Isaiasz 2008), as these churches were used for many different things, yet were built as strong building types. "Multi-use spaces" on the other hand were built for many different things, and nothing in particular (Zeidler 1983).

[10] While assemblies without buildings are proposed in the rich north as a romantic form of protest against the modern morphology, Simone argues that in Johannesburg "people" act „as infrastructure" to indicate that in cities in the south this settlement is broken by default (Simone 2004).

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