James Evans, Andrew Karvonen and Rob Raven (eds.)
The Experimental City, London, Routledge, 2016, pp. 280

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Evans, Karvonen and Raven's *The Experimental City* is a timely contribution to a growing body of literature on urban experiments – for other recent literature see (Castán Broto and Bulkeley 2013; Karvonen and van Heur 2014; Laurent and Tironi 2015). Yet, the current edited volume is distinctive in that it brings together contributions from a variety of disciplines such as transition studies, urban studies and STS. This combination is not always easy or without frictions, but provides the reader with a rich variety of conceptual sensibilities and insights. Urban experimentation on the one hand appears as holding a promise for realizing a more sustainable organization of urban life and overcoming resistance to change, on the other hand, it is also presented as ambivalent and highly political activity requiring careful examination and continuous critical engagement.

With a strong empirical focus, the volume takes the reader on a journey through case studies from regions as diverse as Ghana, Chile, Abu Dhabi, Korea and the UK, to name just a few, thereby showing the prevalence of urban experiments but also the diversity of phenomena taken into account. Some of the volumes stand out chapters for an STS audience include a critical analysis of "cabin ecologies" developed to protect humans in hostile environments (such as space) and a their links to currently emerging "integrated urban infrastructures" such as the Apple campus in Cupertino (Marvin and Hodson), an interrogation of the limits to experimentation when it becomes incorporated as marketable differentiator by the property development industry (Rapoport), a critical analysis of the planning, assembling and inhabitation of experiments in "green living" in Santiago de Chile (Sanzana Calvet and Castán Broto), an ethnographic account tracing the modernist vision of a resettlement experiment and its afterlife in local discourse and imaginaries in rural Ghana (Yarrow) and the speculative but thought-provoking sketch of a potential post-carbon city (Pincetl).

The presented case studies range from bottom-up to top-down initiatives, highly controlled environments to *in vivo* settings, projects branded as experimental and practices spontaneously emerging as such, thereby showcasing different conceptual and empirical enactments of the main issue at stake: the experiment and its relationship to the city. A recurring feature throughout the volume however, is an understanding of the experiment as an arrangement for exploring working relations in order to "prompt genuine change" (p. 1) – to put it in the words of the volume editors – towards more sustainable ways of organizing collective urban life. This is a clear departure from the "classical" understanding of the

Chicago School, which, as argued by Gieryn (2006) understood the urban laboratory as a "restricting and controlling environment, whose placelessness enables generalizations to 'anywhere'" (Gieryn 2006, p. 7). By contrast, most contributors to the current volume do not seek to construct such "placeless places". Experimentation here appears as a broad range of different activities that share the capacity to engender reimagination, redescription and rematerialization of existing urban realities with regard to sustainable development. Throughout the chapters one may however identify different conceptual and empirical takes on this.

One distinct understanding of this city/experiment relationship is exemplified by Ch. 5. Here, cities appear conceptually as "complex adaptive systems with significant embedded dependencies built-in over the years of their construction" (p. 62). This approach, influenced by transition studies, foregrounds how the functioning, or failure of integrated infrastructures crucially shapes the functioning of human and nonhuman urban life and implies a notion of the experiment as virtual but indispensable prerequisite for successful change. Seeing the city as a set of layered and interconnected socio-technical systems leads Ryan et al. to conclude that "trying to re-engineer the city one sub-system at a time is bound to fail because new, often unpredicted, problems are likely to arise in another sub-system" (pp. 63-64). Therefore, they argue, a transition to a "resilient non-carbonaceous city" can only be realized through "a (rapid) transition from one set of socio-cultural technological-physical systems to another set" (p. 64). Experimentation in their view then, is a virtual exercise meant to test and build up these alternative subsystems and to prepare the grounds for the proposed rapid transition.

A second type of urban experimentation is explored in Chs. 14 and 16. Both analyse the case of Masdar, a so called "eco-city" planned from scratch and currently under construction in the United Arabic Emirates. Despite different foci, the authors share the observation that Masdar City is rather a fragmented clean-tech testing site, where too many actors – often profit-driven – through too many experiments – mostly product innovation – fail to assemble the promised eco-city. By the actors involved in Masdar's development the city is thus not so much perceived as a complex socio-technical system or itself the object and target of experimentation, but rather as a tabula rasa, where technological experiments can be staged and commercial solutions to sustainability issues demonstrated. However, as such, so the authors argue, this disconnected type of experimental platforms fails to induce sustainable urban development and to generate knowledge on the deployment of clean technologies in more complex and liveable urban contexts, that could lead to wider social transformations.

A third way of relating experimentation to the city is suggested in Ch. 11. Jana Wendler presents an ethnography of a community garden in Berlin as an alternative, emergent and bottom-up space for experimentation

with social organisation. In her account, experimentation is not at the outset of a policy or company driven project, nor is it explicitly designed as such. Instead, the grassroots community garden project develops over time – or organically, as the author puts it – into an alternative urban space, where different and unforeseen experiments can happen and individual as well as community learning can occur. The complex spatial and social entanglement of the community garden with the wider urban context allows, according to Wendler, "to take up a distinct and valuable role in processes of urban change" (p. 161) which is more open to diverse and sometimes marginal actors. In this conception of "open, extended real-world experiments" (p. 159), instead of virtually testing alternative futures or staging technological innovation on a tabula-rasa, experimentation is a highly situated and embodied activity, that "allows big issues to become knowable in everyday mundane, small-scale practices through the affective relations between body and material", but does not serve as a "replicable blueprint" (p. 160) for other cities.

What these spot lights demonstrate is certainly the sheer diversity of practices and projects that are being theorized as experimental cities or urban laboratories. But they also show what Evans et al. point out in their introduction; namely that "Experiments, understandings of experiments, and the attendant future visions they entail, are not inherently positive but carry politics just like any other development strategy" (p. 3). While STS readers may find that not all approaches chosen in the book are being equally attentive to these politics of experimentation, the rather broad and open minded approach to urban experiments adopted in *The Experimental City* certainly succeeds in mapping out a huge field for future research and conceptualisation, where a stronger involvement of STS scholars can be of benefit.

The relevance of STS engagement becomes especially clear in light of the books wider context. As Maarten Hajer points out in the foreword we are currently witnessing a "turn to experimental governance" (p. xviii), not just among scholars but also in practice. However, and this should be no surprise to an STS audience, scholarly publications like *The Experimental City* do not merely describe this experimental turn but actively contribute to it. Recent work of Hannah Knox provides a telling example of such performative effects of social theory: Knox describes her ethnographic encounter with Zeb, a British IT entrepreneur working on how "digital technologies might provide solutions for climate change" (Knox 2017, 356). As Knox explains, Zeb's own work is inspired by that of Frank Geels (2002) and other transition scholars, some of which contributed to the current edited volume. Based on this encounter Knox argues, that "new techniques of governance – the experiment, the unaccounted for action, the re-description and re-imagination of already existing practices as the basis for future action are crucial for understanding how contemporary governmental actors are imagining and formulating infrastruc-

tures of the future" (Knox 2017, 363). Such observations of performativity do not only affirm the relevance and timeliness of *The Experimental City*, but also the importance of substantial STS engagement with the issues it puts forward and the types of cities it enacts.

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Jennifer Gabrys
Program Earth. Environmental Sensing Technology and the Making of a Computational Planet, Minneapolis, University of Minnesota Press, 2016, pp. 368

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Program Earth is about the becoming environmental of computation. In this book Jennifer Gabrys attends to the (per)formative role that calculative and sensing technologies play as part of everyday and extraordinary environments. These spatializing properties have previously been remarked on in other academic disciplines. For instance authors in computer science (Weiser 1993), social science (Kitchin and Dodge 2011),