

Book Review

Repairing infrastructures: the maintenance and materiality of power

As in the case of the first review for this issue of the journal (Usón this issue), this book review is of another publication from MIT Press' Infrastructure series. As one might expect from this series both exhibit a strong influence from Science and Technology Studies (STS) and take a broad perspective on infrastructure. Henke and Sims use this book to develop a conceptual toolkit for understanding the practices and networks of infrastructural repair through a series of case studies. They conclude by setting the challenge of repair in the context of the Anthropocene, the current era in which the impact human activity can be seen in earth's ecosystems, geology and crucially the climate system. Here the authors expand upon the paradoxes inherent in maintaining and repairing the very infrastructural systems that have ushered in this new era of planetary history.

The insights offered by STS allows the authors to develop a conception of repair that takes in both physical infrastructural systems and the networks they are located within. The latter include the users, maintainers and promoters of infrastructure and their interests, all of whom to a greater or lesser extent shape the functioning and direction of the physical structures. The initial chapter begins with the 2007 collapse of a bridge on Interstate 35 in Minneapolis through which the socio-technical nature of repair is introduced. The authors argue that governance and the limits of expert knowledge offer as much of an explanation as to the material failure of the bridge structure with similar vulnerabilities identifiable in most other infrastructural systems. Through an introduction to the growing academic interest in infrastructure repair and maintenance, familiar terms are introduced such as resilience and sustainability. What is added to such terms are the social and cultural layers of meaning which are often left out in their professional or technical use. In adding such meanings important questions are raised such as; is what aspects of infrastructure development is being maintained (physical or non-physical structures), what ways of living do they support and what collection of interests do they represent?

Chapter 2 begins at the level of the human body. Through a discussion of thermal comfort and the systems that maintain it, we are introduced to the idea that this forms a principle around which such systems are constructed. At the same time we are introduced to the army of maintainers whose often unnoticed role it is to keep systems functioning, 'caring' for them in such a way as to avoid breakdown leading to discomfort (or worse). The authors attention shifts up a level in every successive chapter with the next, (Chapter 3) using the example of the earthquake-resilience retrofit of the San Diego-Coronado bridge to introduce the changing power relations made visible in the process of repair. Here the way that experts from Caltrans were required to negotiate their programme with the Latino inhabitants of Barrio Logan – whose murals adorn the bridge structures that cut through the community and were ultimately preserved – illustrates an acknowledgment of the community's presence and rights which was almost completely absent when the bridge was first constructed.

Chapter 4 introduces the infrastructural state through two examples of its manifestation. The US nuclear weapons programme is used to illustrate the material power of the state whereas the authors use studies of the Gardens of Versailles as a way of showing the state's symbolic power. Both material and symbolic power are connected by the technologies of water management that made Versailles, its lakes and fountains, possible. These are the same technologies that permitted the imposition of material state power over geography through projects such as the Canal du Midi. Here the authors use Michele Foucault's concept of governmentality to illustrate the relationship between experts and

states. They show how the former exhibit much greater control over the process and direction of repair than the (usually) blue collar maintainers. As an example, the authors explain how experts were able to ensure the (university based) intellectual capital of the weapons programme was maintained as a demonstration of state power, whilst the physical testing programmes were abandoned in line with international treaties.

The final chapter takes the discussion to a global level. The authors here show the paradox of the way that we are made aware of our unprecedented planetary impact by (what are in many respects) the same networks of material technologies and knowledge communities that enable us to inflict the level of damage that we have. A further, but linked, paradox they identify is that the maintenance and repair of these existing infrastructural networks in their current form could ultimately lead to our extinction as a species. The author's solution is their concept of 'reflexive repair', an approach that plans for and is aware of the limits and consequences of repair itself. They ask whether we can 'repair the concept of repair', or put another way, can we develop a concept of repair that means something other than simply maintaining existing infrastructural systems and their consequences? A question that links to sustainable infrastructure, what it might look like and whether it is possible when defined in this way.

For readers whose conception of infrastructure is bound by disciplinary or sectoral perspectives (such as engineering and economics) the non-linear associations between the main case studies and the multitude of vignettes from the academic literature is sometimes challenging. The author's clear and engaging writing style and steadily developed argument, however, goes a long way to make the challenge worthwhile. Those looking for 'answers' to pre-determined narrow infrastructure problems might be frustrated to find that the conceptual toolkit for reflexive repair that Henke and Sims provide is in reality made up of a series of questions. Nevertheless, these questions; whether practices of repair retain or challenge existing power relations and inequalities, whether they acknowledge and give voice to the communities and the environments affected, and, most importantly, whether they close-off options for future generations are clearly relevant to all those involved in the maintenance of infrastructure.

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