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Place as a boundary device for the sustainability sciences: Concepts of place, their value in characterising sustainability problems, and their role in fostering integrative research and action

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ABSTRACT

Sustainability science is *difficult* to conceptualise, plan and conduct, given the broad range of epistemological commitments, methodological practices, and approaches to problem-framing taken by its constituent disciplines. This special issue is based on the idea of place as a boundary *device* for the sustainability sciences, in the belief that it can foster integrative work, guide theoretical reflection, encourage methodological innovation, and inform empirical research. Here we reflect on place concepts, before developing a series of arguments on the relationship of place to sustainability science. We first emphasise that place is not solely an interpretivist or post-positivist perspective on sustainability, as it is also congenial to mechanistic or positivist ontologies. Secondly, we argue that place does not entail a retreat from theory into particularism or thick description; it is coherent with attempts to provide explanations. Thirdly, we claim that it does not imply a sedentary, parochial approach to sustainability science that neglects interactions across scale or location. Fourthly, we caution that public spheres for tackling environmental issues can act to close-down deliberation and marginalise informal knowledge, if institutions retain norms that emphasise abstract, placeless evidence. We highlight how these ideas have been cashed out in the collected papers in this special issue, in domains ranging from biofuels governance, to estuary management, to marine governance, to ecosystem stewardship, to community-led low energy transitions, and to climate change more broadly. We end by suggesting that a place-based approach to sustainability science entails a relentless focus on context. It takes the spatially patterned, heterogeneous, fluid, networked, and contextually moderated form of socio-environmental processes as central points of investigation, rather than as mere modifiers of more general mechanisms.

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1. Sustainability science: a plural and difficult field

Sustainability science is motivated by the challenge of meeting the needs of a growing but stabilising population, whilst at the same time sustaining basic planetary life support systems and substantially reducing global hunger and poverty (NRC, 1999; Clark, 2007). Its broad scope and problem-driven nature means that it draws on a wide array of disciplines, notably geography, physics, economics, ecology, political science, the environmental social sciences (Clark, 2007), and more recently the humanities (Hulme, 2011). This has yielded substantive advances in both fundamental and applied areas, yet multi-disciplinary work is famously *difficult* (Pahl-Wostl et al., 2013). Widely varying epistemological commitments, methodological practices, and approaches to problem framing make integrative research programmes hard to conceptualise, plan, and implement. At the heart of these difficulties are some fundamental disputes over the objects and purposes of science. Many academic disciplines have been forever conflicted, and often ''at war'' (Gieryn, 2006), over whether science should be concerned with description or explanation; with uncovering causes or with capturing regularities; with the normative or the positive; and with the contingent or the universal. This special issue is based on the idea of place as a ''boundary device'' (c.f. Star and Griesemer, 1989) for the sustainability sciences (building on NRC, 1999), the suggestion being that it is a concept of shared interest, and sufficient flexibility, to allow plural disciplines to organise around in the absence of consensus on epistemological, methodological, and ontological matters. Moreover, we emphasise that place has potential value beyond merely playing an organising function; putting the idea to work can foster theoretical and methodological innovation in sustainability research. In this paper we seek to clarify the concept(s) of place; explore how it might inform theory, method and practice in sustainability science; and reflect on how in turn this may contribute to theorisation of place. It motivates, synthesises, and builds upon the contributions within this special issue.

2. Place and scientific enquiry

2.1. *Place and the (de)construction of scientific knowledge*

It may seem at first glance rather odd to suggest place as an organising concept for sustainability science. Indeed, scientific enquiry has classically been viewed as a ''placeless'' phenomenon (Finnegan, 2008), with covering-law accounts portraying scientific knowledge as transcendent, universal, and timeless. When science was shown to be placed, it was typically a form of deconstruction or critique (Ophir and Shapin, 1991), e.g. *your knowledge is not quite as transcendent as you claim it to be; see how the manner in which it was produced and evaluated was shaped by social relations, cultural contexts, and institutional interests*. This (caricature of) deconstruction typically focuses on how various dimensions of context – history, politics, institutions – shape the construction of scientific knowledge, and on the often labour intensive social and material activities (e.g. standardisation, experimental design) required to make facts travel across time and space (Latour, 1993; Law and Mol, 2001). Our focus, however, is more on how scientists go about creating knowledge *about* places, i.e. where place is an *object* of scientific study, rather than some orthogonal influence that impinges on the development of universal knowledge.

2.2. *Place as an object of scientific study*

Why focus on places in sustainability science? For example, is it not simply a brute fact that many of the major ecological threats that the world faces – from climate change to biodiversity losses – are driven by processes that operate at global-scales (e.g. planetary heat balance; market processes), causal mechanisms that are relatively invariant across space (e.g. between population and environmental impact), and involve entities that have universal, fixed properties (e.g. the radiative properties of greenhouse gases) (see Hulme, 2010; Jasanoff, 2010, for critical analyses of such global framings)? And is globalisation not acting to homogenise the social, cultural, and economic drivers of sustainability problems across space, rendering place ''phantasmagoric'' (Giddens, 2013)? On this reading, a focus on place may seem fundamentally misconceived or even defeatist: a retreat into the safety blanket of parochial case studies in the face of global scale risks. Yet recent years have seen a renaissance of interest in place across a range of academic disciplines concerned with sustainability, and, crucially, across researchers working at scales spanning the macro to the micro (e.g. Hulme, 2008; Adger et al., 2011; Lambin et al., 2001; for an influential early statement on the importance of place, see NRC, 1999). Place, it seems, is gaining increasing analytic purchase in our modern globalised world, and not just within research traditions that adopt a localist perspective. Later we clarify and develop various conceptualisations of place in an attempt to account for this apparent puzzle, but first we distinguish between macro and micro scale approaches to sustainability science.

2.3. *Localist vs. macro schools of sustainability science: shared objects of concern, and important divisions*

For analytic convenience, we distinguish two broad research traditions in sustainability science: a macro scale approach that analyses processes at a relatively aggregated level, and a localist tradition often (self) described as ''place-based.'' The former focuses on relations between relatively abstract categories such as population, technology, and environmental impacts (e.g. IPAT, Dietz and Rosa, 1997; planetary boundaries, Rockström et al., 2009; and early generation integrated climate models, Smith et al., 2001). The latter is motivated by the idea that sustainability problems are often best understood by analysing human–environment interactions in particular locations and at relatively small scales (reviewed in Wilbanks, 2015). The former is (implicitly) based on the *ceteris paribus* notion, in the sense that it conceives of the drivers of environmental impacts as more or less fixed and stable, with modifying interactions often fleshed out as the research progresses (e.g. research exploring the modifying role played by institutions within the IPAT framework). The localist