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Reconfiguring environmental expertise☆

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ARTICLE INFO

Published on line 10 January 2013

Keywords:
Environmental history
Environmental expertise
Environmental policy
Scientific advice
Environmental humanities
Environmentalism
Sustainability

ABSTRACT

This article examines the concepts 'environment' and 'expertise'. It is argued that these concepts, while having long and diverse individual histories, acquired new meaning through a process of mutual co-production which occurred largely in the period 1920–1960, thus significantly preceding the common understanding of environmentalism as a phenomenon emerging in the 1960s. It is further argued that environmental expertise is much predicated on natural science in a range of fields that were integrated into a comprehensive understanding scaling upwards from the local to the global. Quantitative analysis, observing, measuring, and monitoring rates of change of a growing set of indicators were other key features of this emerging understanding of the environmental. Yet another key aspect was the self-proclaimed ability of environmental expertise to predict rates and directions of current and, crucially, future changes of global environmental conditions, increasingly assuming that these changes were largely of human origin. In addition to thus presenting a brief history of environmental expertise the article also makes the point that the environmental was, despite changed by human action, essentially regarded as something that did not in itself belong to the human or the social and thus the implicit prerogative of the natural sciences. The article argues, on the contrary, that there is solid historical evidence to suggest that 'environment' should also, perhaps primarily, be understood as a social concept, or rather as an extension of the social into nature. As conventional environmental expertise has failed to provide the advice needed to question the driving forces behind environmental degradation and lack of sustainability it is here instead suggested that environmental expertise be fundamentally reconfigured to include the social sciences and humanities, and that concerted research efforts are directed to the understanding of the formation of environmental expertise.

The humanities and social sciences are increasingly called on to consider futures under global change. The *Earth system science visioning process*, led by ICSU, The International Council for Science, and ISSC, International Social Science Council, aims to restructure global research organizations and programs to better accommodate human sciences. A similar ambition is a key feature of new European research programs (ICSU, 2011; RESCUE, 2011). The human sciences are responding with developments in a vital and future oriented 'environmental humanities' (Swearer, 2008; Griffiths, 2007;

☆ The article is based partly on work in the IHOPE (Integrated History and Future of Peoples on Earth; www.stockholmresilience.se/ihope) research project "Expertise for the Future", undertaken by the present author in collaboration with Libby Robin, Australian National University & KTH Royal Institute of Technology, Stockholm, and Paul Warde, University of East Anglia, and sponsored by, The Stockholm Resilience Centre, The Center for History and Economics at Cambridge and Harvard Universities, and The Royal Institute of Technology, Stockholm. Project web pages: www.cam.ac.uk/kings/histecon/expertise; http://www.stockholmresilience.org/ihope/case-studies/casestudies/expertiseforthefuturehistoriesofenvironmentalpredictionandpolicy.5.2a759bb41277b00e3c38000345.html. I am deeply indebted to Libby and Paul for their ideas and support during more than two years of collaboration.

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1462-9011/$ – see front matter © 2013 Published by Elsevier Ltd.
http://dx.doi.org/10.1016/j.envsci.2012.11.006

Sörlin, 2012). The idea that we are now, as has been suggested, in a new geological epoch, the Anthropocene (Crutzen, 2002; Steffen et al., 2007; Robin and Steffen, 2007), where humans are implicated in all the biophysical systems has drawn Earth system scientists increasingly towards 'social systems.' Still, there are as yet few road maps to show how traditional humanist and natural scientific approaches can be integrated.

In this article the aim is to make a contribution to this process and seek new pathways for integrating the human and natural sciences through new insights into the ontogeny of global change science. Concepts such as 'environment', 'prediction', and 'expertise' are essential, especially how they align with the history of the vibrant, yet fledgling, field of global public policy, which defines itself through these concepts. Only when we understand how public policy making is constituted – professionally, scientifically, socially – can we begin the integrative work that is needed for successful research programs and policies for the future.

Part of the unpreparedness to consider environment as a social, rather than a natural science, concept is the ideology of science. To a large extent science has favored and idealized what Roger Pielke Jr in his book *The Honest Broker* (2007) has called the ''Pure Scientist,'' a detached aloof observer whose very ethos is to not judge or synthesize in any direction but just hand over the scientific findings to the decision makers, much the way Vannevar Bush described it in his 1945 report to the President, *The Endless Frontier*: do your ''basic'' research, publish, and let others think of consequences, do the ''applied'' research that follows and take the policy measures that are necessary (Bush, 1945; Godin, 2003, 2006; Calvert, 2004).

This approach can be juxtaposed with another strong tradition, one of scientific environmental advice, often advocating an environmentalist cause. In Pielke's terminology this advice takes many forms, a strong position is the ''science advocate'', who uses, sometimes selectively, scientific findings to recommend a stance. This could be environmentalist, or indeed also anti-environmentalist, as in the infamous case of hawkish American climate skeptics, some of whom have also denied the relation between smoking and lung cancer and been against restrictions on tobacco companies (Oreskes and Conway, 2010). A more reflexive and balanced form is, as the title of Pielke's book suggests, the ''honest broker'' (Pielke, 2007), who does not conceal his own position but makes a point of presenting to his audience the whole range of positions and knowledge involved so as to make it possible for everyone to form as informed an opinion as possible.

While nobody would question the scientific base of environmental advice, Pielke's and other work demonstrates that the interface between knowledge and practice is more complex and constantly undergoing change (Nowotny et al., 2001). Nonetheless, despite the change, the science that is considered relevant is almost always the formal and quantitative. This occurs at the cost of interpretive attempts, even when a lot of recent and high quality work from the humanities has become available (Hulme, 2011).

We must ask why? And, more fundamentally, we must ask how far advice should be predicated on scientific knowledge? What is the role of values, how should they be accounted for and how should we draw the boundary between the legitimately political and the legitimately scientific? A case in point is the increasingly popular concept of ecosystem services. Now adopted in economics and urban planning these services are also ascribed monetary value in the explicit ambition to make them a legitimate part of decision-making processes, summarized in the acronym TEEB, The Economics of Ecosystems and Biodiversity, which is also global network (Ring et al., 2010). This very approach, which on the surface seems to strengthen the position of ecosystem services, suffers the same problems as many other policy tools designed to deal with environmental impacts: they tend to favor those that have the economic means to get their choices satisfied even at higher prices. They also tend to even out local particularities and serve as ''technologies of globalization'', often at the cost of cultural and social diversity and local civic participation, precisely through the intervention of a highly formalistic form of expertise (Ernstson and Sörlin, in press). Further they open up the possibility that the market does not value ecosystem services very highly which may put future generations in danger and, if they are valued highly, there is an equity-issue. The simplicity in numbers is, to summarize, tempting but problematic, or as economist Richard Norgaard (2010) has recently described the way that the ecosystem services concept is currently moving: ''from eye-opening metaphor to complexity blinder''.

As already indicated a chief aim of this paper is to make some of the foundations of environmental advice and policy more visible. This will be done not through analyzing further how they unfold in current practice (which is done elsewhere in this theme issue), but rather through anchoring environmental policy advice in what we have learned in recent research on how the 'environment' became established and stabilized as a concept and as a policy arena. This history leaves many interesting insights which should be of relevance as we are increasingly trying to carve out roles for the social sciences and humanities in reconfiguring relevant expertise for sustainability.

1. The origins of 'environment'

It would seem obvious that before there can be environmental 'expertise' there must be 'environment', but interestingly the two concepts emerge and develop not consecutively but simultaneously, co-produced as a kind of double helix so that the modern usage of 'environment' is essentially constructed by those that claimed expertise on it and also provided the advice. So what is then 'the environment,' where does it come from and how could it be meaningfully understood in the context of environmental expertise?

As a word it is old, used since the Middle Ages (OED, 2011), but as a modern concept it is not much more than a century old. Historians have since the rise of environment as a major social issue been extremely keen to dissect crucial concepts such as ''nature'' (e.g. Glacken, 1967; Merchant, 1980) and ''wilderness'' (Nash, 1967; Cronon, 1995). Surprisingly few, however, have thoroughly examined ''environment'' itself, despite the fact that the concept is now a prefix in several dozen academic specialties and hundreds of other words.