



Climate change studies and the human sciences

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A B S T R A C T

Policy makers have made repeated calls for integration of human and natural sciences in the field of climate change. Serious multidisciplinary attempts began already in the 1950s. Progress has certainly been made in understanding the role of humans in the planetary system. New perspectives have clarified policy advice, and three insights are singled out in the paper: the critique of historicism, the distinction between benign and wicked problems, and the cultural critique of the ‘myths of nature’. Nevertheless, analysis of the IPCC Assessment Reports indicates that integration is skewed towards a particular dimension of human sciences (economics) and major insights from cultural theory and historical analysis have not made it into climate science. A number of relevant disciplines are almost absent in the composition of authorship. Nevertheless, selective assumptions and arguments are made about e.g. historical findings in key documents. In conclusion, we suggest to seek remedies for the lack of historical scholarship in the IPCC reports. More effort at science-policy exchange is needed, and an Integrated Platform to channel humanities and social science expertise for climate change research might be one promising way.

1. The need for the historical sciences in climate change research

A number of public policy documents emphasize the need for radical interdisciplinary collaboration between the natural and the human sciences, such as ‘Challenges of a Changing Earth: Global Change Open Science Conference’ held in Amsterdam in July 2001; European Science Foundation ‘Forward Look’ 2002; International Council for Science ‘Visioning Process’ 2009; International Council for Science ‘Future Earth – research for global sustainability’ 2011; European Science Foundation-COST ‘RESCUE’ 2011–2012; and ‘Future Earth’, now institutionalized, 2013–2023. The major issues of global environmental change, such as climate change, loss of biodiversity, pollution, land cover change, and oceanic resource depletion, etc., are all instances of human-nature interaction. Tackling the problems humanity has created with respect to its survival as a species on the planet encompass a non-trivial social science/humanities aspect, namely the study of what motivates us as humans and how we may govern ourselves. Research policy statements advocating interdisciplinary approaches such as the above mentioned have not been able to effectively change academic reality, which is lagging behind (Holm et al., 2013). Despite the multitude of calls for interdisciplinarity, the need to encourage the integration of human sciences in climate change research remains.

The mandate of the Intergovernmental Panel for Climate Change

(IPCC) is similarly inclusive: “...to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation. IPCC reports should be neutral with respect to policy, although they may need to deal objectively with scientific, technical and socio-economic factors relevant to the application of particular policies” (Principles, 1998/2013, #2). However, ‘socio-economic’ information and factors may of course be defined in many different ways. What interpretation the IPCC puts into practice can be clarified only by analysis of the reports. Importantly, the IPCC reports are not scientific reports as such but the result of a consultative science-based process which includes consensus-seeking among governmental representatives.

2. Human sciences – clarification of the term

There is no consensus on the definition of the humanities and social sciences. We suggest to use human sciences as shorthand to cover the broad spectrum of disciplines typically described as social and economic sciences, humanities, and the academic disciplines of arts (the latter encompassing the analytical but not the performative aspects of the arts), including those, such as archaeology and linguistics, which encompass studies undertaken with the methods of the natural sciences

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to further their epistemic interest in the human material or mental past. There is much confusion about these disciplines outside their own frame of reference. Often the shorthand preferred is the social sciences or socio-economics which by default tend to exclude a large number of disciplines such as history, philosophy, and literature. We prefer to use the inclusive term ‘human sciences’ to underscore that we hold that humanities and social sciences share the fundamental pursuit of truth with all sciences (however tentative such efforts are bound to be in any academic pursuit) (Holm et al., 2014). All sciences involve a combination of findings and interpretation, and while interpretation in the human sciences may be more prone to contestation there is no epistemological difference in the requirements of consistency and methodological rigour. Humanities’ narratives are ‘truth-claiming’, as they understand themselves as scholarly pursuits.

By way of clarification let us consider the example of the academic discipline of history. ‘History’ is an ambiguous term and the historical disciplines encompass both natural and human history. Disciplines such as geology, field biology, archaeology and history work on different time scales and address changes of abiotic and biotic nature and culture. Often the term ‘historical disciplines’ is used to denote only those approaches which include the human factor and so excludes pure natural history. ‘History’ in our use of the word does, however, include any approach that sheds light on the human and non-human past whether information is derived from earth sediments or from written records. The complexities of human processes often make interpretation (or modelling) difficult, but not fundamentally different to other complex phenomena.

Collaboration between the natural and human historical disciplines to address questions of the interaction of humans and nature over the long term can be collectively identified as ‘environmental history’ (McNeill, 2003) or ‘human ecodynamics’ (Harrison and Maher, 2014). Annual environmental history/geography/archaeology conferences around the globe have delegations running into the thousands. A global overview is provided by the International Consortium of Environmental History Organisations [www.iceho.org, accessed 31 Jan 2016]. Environmental historians make up a sizable portion of all academic staff. An audit of 8848 researchers associated with Irish universities in October 2009 found that no less than 533 persons self-identified environmental history as of core, moderate, or marginal relevance to their own research. Of the 118 persons identified as core environmental historians most came from the disciplines of archaeology, history, literature, geography, and history of science (Ludlow et al., 2010).

History is often used by non-experts for a presentist or teleological purpose – e.g. by censuring the present by the past or by simply projecting past trajectories into the future. Academic historians will insist on quite a different approach, namely to understand the past on its own devoid of any presentist purposes. Some historians will even insist that no lessons may be drawn from studies of the past and that historical studies are of little or no relevance to the present or future. This position is consequently of no relevance to climate change studies. However, many historians will argue that lessons may indeed be learnt from the past and that an academic historical analysis may have profound consequences for our understanding of the present and projection of the future. John Tosh, in his influential deliberations on ‘The Pursuit of History’ points to the investigation of difference, context and process as three specific ways ‘how the scholarly study of history can yield useful knowledge’ (Tosh, 2015:26f).

The relevance of human science to climate research is not restricted to those academic sub-disciplines which are labelled environmental history, environmental sociology or environmental economics. Studies of social, political, economic, or cultural perception and behaviour may be of value to climate change research even when not explicitly conducted for this purpose. In principle, the entire academic knowledge base is relevant and disciplinary fragmentation and institutional barriers to exchange of information and insight should be minimised.

3. Early examples of integration of human and natural earth science

The idea that human action has a planetary impact may be ascribed to the historian George Perkins Marsh. In *Man and Nature* (1864), revised as *The Earth as Modified by Human Action* (1874), Marsh argued that unmanaged exploitation and cultivation of natural resources has altered and ultimately destroyed land through history. His writing was a source of inspiration for both practical and ideological conservation initiatives and movements through the twentieth century (Lowenthal, 1958).

After the Second World War there was a growing awareness of human impact on the global environment. The first large-scale multi-disciplinary assessment was the international symposium ‘Man’s Role in Changing the Face of the Earth’, organized in 1955 by the Wenner-Gren Foundation for Anthropological Research in Princeton, USA. The meeting hosted 52 talks representing a broad selection of geoscience, bioscience and human science by distinguished names such as Carl Sauer (geographer), Marston Bates (zoologist), Lewis Mumford (literary and architectural critic), Paul Sears (ecologist), James Malin (historian), Karl Wittfogel (sinologist), Pierre Teilhard de Chardin (paleontologist), H.C. Darby (historical geographer), Luna Leopold (geomorphologist), and Kenneth Boulding (economist). The themes of the resulting massive book (Thomas, 1956) dealt largely with how humans have changed terrestrial landscapes. A section on atmosphere mostly dealt with urban pollution and did not identify human potential to change planetary climate. Overall, the book maintained a scholarly, detached tone in order to set a massive research agenda for the future.

Almost forty years later the equally massive publication, *The Earth as Transformed by Human Action: Global and Regional Changes in the Biosphere over the Past 300 Years* (Turner et al., 1993), was dedicated to Marsh’s volume, and in many ways pursued the same path as the Wenner-Gren symposium. It was authored by a range of almost a hundred leading scholars from a broad spectrum of academic disciplines. The focus shifted from land-surface alteration to material and energy flows and benefitted from a much improved quantitative evidence base (Turner et al., 1994). It did, however, also indicate a change from the inclusive character of *Man’s Role* to a disciplinary focus on geography as the main source of insight. The editors afterwards proudly stated that “of the some twenty disciplines represented by the participants, geographers proved disproportionately well qualified” (Turner et al., 1994, pp. 714). Such a shift in perspective towards a disciplinary, geographical focus became evident in an overview of land change science which prioritized remote sensing and physical modelling while paying less attention to possible multidisciplinary insights (Turner et al., 2007). Such a concentration and disciplinary focus may be understandable in view of the accelerating demands on technological and methodological depth. It is, however, a cause of concern if the intent is a rounded characterization of a problem or indeed a societal solution.

4. Benign and wicked problems

Human sciences made a number of important findings in the second half of the twentieth century which have a lasting impact on the usefulness of all the sciences for coping with future problems. Philosopher Karl Popper famously warned against the *Poverty of Historicism* (Popper, 1957). His argument was directed against “an approach to the social sciences which assumes that historical prediction is their principal aim...” and indeed “that it is the task of the social sciences to lay bare the law of evolution of society in order to foretell its future”. Originally received as a work against Marxist determinism, the basic insight reaches far beyond its contemporary polemic. Popper maintained that as human ingenuity, including technological innovation as well as human action and reaction, cannot be predicted, there is no way of predicting the future. He advised that any future-telling

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