



## Limits to the Anthropocene. What are the challenges and boundaries of science for the post-normal age?

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Some 40 years ago, the first report of the Club of Rome on "The Limits to Growth" (Meadows et al.) was published in 1972. It contained an understanding of the world as a dynamic and complex system in which human intervention could play a potentially decisive role. In 2000 the term "anthropocene" was coined by Paul J. Crutzen and was able to substitute the term "holocene" for the current era in some areas of the geosciences. The term rests on the premise that with the beginning of the industrial age in the 19th century, humans have become the decisive force in the global ecosystem. The effects of this development are visible, for example, in anthropogenic climate change. Thinking about the current geological era as the "anthropocene" raises two major questions: (1) the question about the basic relation between humans and nature as well as its boundaries, and (2) the question about the challenges these developments pose for both natural and social sciences. In our proposal we will deal mainly with the second question. However, these scientific challenges are rooted in the new understanding of ecosystems as integrated systems of humankind and nature. "Science for the post-normal age" (Funtowicz/Ravetz 1993) encompasses scientific fields like technological impact assessment and risk research as well as environmental research and climate research. Attributes of these scientific fields are (a) complexity, (b) uncertainty and interdisciplinarity due to complexity, and (c) transdisciplinarity due to a new linkage of science to the political and economical field as well as to the social space. New scientific structures are based on three interfering processes (Weingart 1997): (I) Scientification of politics, (II) politicization of science, and (III) mediatization of the science-politics-relationship. The advent of post-normal science can be watched in an institutional and organizational change: (i) research is dedicated to application but the implementation of results into society is a controversial issue, (ii) next to scientific criteria quality has to be proved by economical, political and social criteria, (iii) knowledge production is no longer the privilege of universities (loss of the monopole) but broaden to different places like research centers, industrial laboratories, government agencies, think-tanks.

Remaining to the level of interdisciplinarity some problems arise which are deeply rooted in disciplinary traditions and boundaries like scientific language, scientific methods, presenting practices, and last but not least epistemology. According to Helga Nowotny (1995), institutional change of science (e.g. re-combination of disciplinary standards and knowledge) leads to epistemological change. Inventing, implementing and applying this epistemological change into the practice of research seem to be the greatest challenge of interdisciplinary team work. Aim of this proposal is to present examples and experiences of interdisciplinary negotiation (symposia and conferences) and interdisciplinary practice of research (projects) within the cluster of excellence "CliSAP" at the University of Hamburg which is dedicated to interdisciplinary climate research.

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