Workshop on "Science Studies Meet Climate Change", Copenhagen, 23-24 April 2009

**Helga Nowotny**

# The Passions and the Interests: what has STS to say about climate Change?

*Introduction:* A quick glance at the current policy scene shows both, a growing sense of urgency and an equally growing sense of frustration. At the last meeting in Copenhagen in March 2009 some 2000 delegates gathered for a scientific update of the IPCC's 2007 assessment. While some argued that even more dire consequences of a higher than foreseen temperature rise could be expected, others warned that more inconvenient truths could be hidden in the IPCC report like the aerosol masking of global warming due to an insufficient understanding of the sources of human greenhouse gases. All agreed that it was urgent to act. Good news was the return of the US to the discussion and negotiation table. Among recently started initiatives the US Congress commissioned a report on policy options from NAS and the restructuring of the US Climate Change Science Program foresees the integration of scientific-societal issues as a priority. Meanwhile, ICSU is developing a strategy for coordinating international global environmental change research (WCRP, IGBP, IHDP, DIVERSITAS).

Frustration arises mainly over the failure of IPCC to come up with an array of policy options. According to Hans Joachim Schellnhuber, IPCC is "inherently tuned for burying crucial insights under heaps of facts, figures and error bars". While the knowledge of the complexity of the climate phenomenon is growing, the scientific consensus reached by the IPCC is fragile. It can dissolve quickly when stabbed at and nowhere is a readiness for robust advice on policy options in sight. Why is this so?

*Thesis No.1:* Underlying many of the unresolved policy issues is an inherent though not openly articulated contradiction between the objective of further economic growth (and the form it should take) and of protecting the environment. Policy discourse tacitly assumes that a balance exists or can be reached, while scientific discourse tilts towards ecological concerns. Thus,

some critics argue that a 14% reduction from the 2005 US carbon emission values cannot be achieved by 2020 without compromising economic growth. The second unresolved tension revolves around the asynchronicity of the different speed with which the dynamics of climate change progresses and with which major economies can decarbonize through various mixes of policy measures. Linking both contradictions is the price mechanism, which ultimately reduces many issues to the question what price (and at what social cost) a society is willing to pay for a viable and sustainable future.

*Thesis No. 2:* It is important to realize that in all these scientific and political discussions passions and interests are involved which are difficult to disentangle. Albert Hirschman has shown how in the 17th and 18th century the 'interests', meaning commercial goals and industrialization won out over the 'passions' of religious and ideological conflicts. Ass an emergent scientific phenomenon with a huge societal impact climate change is based on a complex interweaving of passions and interests. Passions run high between skeptics and believers, among scientists and non-scientists alike. Interests exist everywhere in open and hidden forms. The stakes are high and very unequally distributed.

*Thesis No. 3:* STS enters when trying to understand the emergence of the new entity called climate change, the form it takes, the trajectory of its transformation, the meanings it generates and the range of societal responses and changes it evokes. Two strands in this trajectory are remarkable: one is the role played by scientific elites in the transformation (Victor and Hart, 1993) and the shifts from specific and rather narrow issues to broader environmental concerns that continued to transform global warming into global climate change. Elite scientists succeeded to set up a policy agenda with a strong international component that eventually led to the establishment and subsequent success of IPCC as the organisation in charge of the issue. The second strand concerns the contribution coming from the social sciences. My claim is that the economists (still a social science in my view) participated in this process from the very beginning. They stepped in when military concerns and interests receded.

*Thesis No. 4:* In order to better understand the specific mix of science, politics and society/citizens and the continuing re-configuration that resulted from the successful ascendency of climate change to become a top priority on the political and scientific agenda worldwide, the role played by the media has to be included. Who influences whom and how, when should we

stop worrying and begin panicking and similar questions are strongly mediated through iconic figures, be they persons (Al Gore and others) or powerful visualizations (the hockey-stick and other symbolic representations, popular movies, advertisements).

*Thesis No. 5:* Moving closer to the home turf of STS and its past and present contributions, the role of simulation models moves centerstage. Whether and to what extent, they function as 'predictive truth machines' (Brian Wynne) or as (smart) heuristics, is an interesting issue that invites broader comparison with other kinds of models and modeling and their use (or abuse) in mobilizing passions and interests. The most recent divergence in financial risk modeling by economists and physicists (with the former using statistics and Gaussian distributions and the latter power law approaches) or the cautious approach taken by seismologists and volcanologists in the predictive value of their models, are a case in point. The old saying 'all models are wrong, but some are useful' comes home with a vengeance.

*Thesis No. 6:* There is also no lack of controversies, which to study STS is particularly good at. Among the controversies waiting to be scrutinized are what I call the 'Lomberg syndrome' and the Stern vs. Nordhaus controversy, two economists at odds about how to discount the future. This controversy revolves around much more than a technical issue: what is at stake is how to conceptualize and operationalize the concept of 'future generations' to which an economic value has to be allocated. There is also the interesting phenomenon of the emergence of scientifically highly respected dissenters, like Freeman Dyson. On a more general level, it is obvious that the scientific consensus enacted by IPCC is simultaneously a robust and highly fragile phenomenon: robust, since scientists feel obliged to speak with one voice in public in order to be heard, while under other circumstances the scientific consensus quickly evaporates.

*Thesis No.7*: It is not clear at all which role is played – or should be attributed – to radical technological inventions and technological fixes in promising as well as becoming the material part of policy options and possible 'solutions'. As in other openings of windows of opportunities, this is also the time for sometimes outlandish technological visions to come to the fore, like CO2 absorbing genetically engineered trees or phytoplankton; iron seeding of the oceans or snow-dumping in the East Antarctica. In addition, some highly relevant technical or scientific knowledge is available, but in need of 'scaling up' in order to become feasible in economic terms.

*Thesis No. 8:* Any technological innovation must be accompanied by or embedded in social innovation. How global is global climate change and how are regional and local variations and diversity integrated as well as differentiated? An acute problem in this regard are the missing voices from the South, especially those coming from the grossly underfunded and often inadequate social sciences in the South (Joyeeta Gupta). If we want to imagine alternative futures and come up with social innovations we need to think and re-think above all in terms of institutions. As the interlinkage of problems like food, water, energy, poverty and migration with climate change becomes increasingly obvious, so does the existence of an 'institutional gap'. Concepts like 'vulnerability' and 'resilience' with their rich descriptive and theoretical content, call for policy measures that go beyond adaptation and mitigation.

*Thesis No. 9:* A further challenge to STS are the 'green technologies' currently in the making. Different RD&I policies to encourage and support them are proposed in the US and the EU. It would be interesting to follow the various trajectories, actors and their arenas, comparing the scientific-technological problem-spaces green technologies inhabit and the spatial and temporal scales on which they will materialize, shaping and being re-shaped by society.

*Conclusion:* If Climate is indeed (re)making society by (re)making scales and kinds (Sheila Jasanoff) it offers an extremely rich site for much stronger involvement by the (non-economic) social sciences. Their contribution lies not so much in offering 'solutions', but in analyzing how to define and frame problems and to identify which kind of knowledge is relevant in a given context. This implies to be able to think simultaneously at different temporal scales. It also implies an innovative engagement with globality. Historically, the social sciences grew up in the shadow of the nation state and became institutionalized in the late 19$^{th}$ century. It is intriguing to ask what some of the early 21$^{st}$ century analogies might be.

Literature:

Gupta, Joyeeta (2008) "Global Research Challenges: Addressing the Challenges to Developing Countries", Institute for Environmental Studies, UNESCO-IHE, Institute for Water Education (power-point-presentation)

Hart, David M. and David G. Victor (1993) “Scientific Elites and the Making of US Policy for Climate Change Research, 1957-74”, *Social Studies of Science,* 23; 643-80.

Hirschman Albert (1977) *The Passions and the Interests: Political Arguments for Capitalism before its Triumph.* Princeton University Press.

Jasanoff, Sheila (this workshop).

Nordhaus, William D. (2008) *A Question of Balance: Weighing the Options on Global Warming Policies.* Yale University Press.

Schellnhuber, Hans Joachim (2008) *Proc.Natl.Acad.Sci.U.S.A.*, 105, 14239.

Stern, Nicholas (2007) *The Economics of Climate Change: The Stern Review.* Cambridge University Press.

Wynne, Brian (this workshop).

Acronyms:

CCSP US Climate Change Science Program
DIVERSITAS An International Programme on Biodiversity Systems
ESSP Earth System Science Partnership
ICSU International Council of Scientific Unions
IGBP International Geosphere-Biosphere Programme
IHDP International Human Dimensions Programme
IPCC Intergovernmental Panel on Climate Change
NAS National Academy of Sciences
WCRP World Climate Research Programme