

# Climate Philosophy Newsletter

Volume 3 (2009/2010)

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*“The roots of the problem of climate change are essentially cultural. The solution must be too.”*  
Marcel Cano (University of Barcelona)

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## Welcome

The 2009 Climate Philosophy Newsletter reflects only a fragment of activities; kindly accept apologies for any omissions. With your feedback, we hope to correct this in future issues.

There is ample room for improvement. Conceptual concern with climate is not yet systematic. We are enthralled by climate change and look at practice, but we also need to reflect on climate and start looking at theory. Right now the field of study is climate ethics. Good! But where is phenomenology? Where is ontology? Where is epistemology? Where is philosophy of science?

Outside our discipline there are related inquiries that appropriate philosophical material.

Geography investigates climate as a cultural-spatial phenomenon, as via A. Berque (École des hautes études en sciences sociales, Paris), as the Heideggerian legacy of the work of T. Watsuji.

Theology made news with the Trondheim (Norway) [Religion and Climate Change](#) workshop 2008. Another climate theology workshop is being planned for 2010, at Potsdam (Germany).

Economics joins the fray with the study of the mitigation of climate change in utilitarian terms; an economist who now teaches in philosophy, J. Broome (Oxford University), put "[Ethics and Economics of Climate Change](#)" on the June 2008 print cover of Scientific American.

For the 2010 Climate Philosophy Newsletter I have one wish: I would like to see more stuff, more ideas, and more thinking outside the box! For example, here in America, what's happening with pragmatism? What synergies are possible between pragmatism and climate philosophy?

Or, in Latin America, what's happening with liberation theology, post-Hegelian and neo-Marxist thought and climate philosophy? Is global warming a lethal failure of free market liberalism?

Next, in Europe, what about the climate-retrievals of Leibniz, Wolff, Kant, and Heidegger?

And in Africa, how do sage-philosophers and their modern counterparts see climate and climate change?

And in Asia, what are colleagues doing now with Watsuji's notion of climate or *fūdo* (風土) and other ideas from the Kyoto School? How are Chinese philosophers working with their beautifully precise concept of climate, *qì-hòu* (氣候)? How do Daoists and Confucians see climate and climate change? And finally, and across the continents, what does philosophy of science tell us about climatology as the first synthetic, predictive, and holistic research program? Are we finally done with old-fashioned reductionism? Are we ready for a paradigm change?

--MS

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## Research

**Derek Bell** (Newcastle University) will co-edit, with Simon Caney, a topic issue on *Morality and Climate Change* for *The Monist*. Submission deadline is 31 July 2010. See calls for papers.

**Isis Brook** (University of Central Lancashire) published “Turning up the heat on climate change: are transition towns an answer?” in *Environmental Values* 18 (2009): 125-128

**Donald A. Brown** (Dept. of Environmental Protection, Pennsylvania) published “The importance of creating an applied environmental ethics: lessons learned from climate change” in Ben A. Minteer, ed., *Nature in Common? Environmental Ethics and the Contested Foundations of Environmental Policy* (Philadelphia: Temple University Press, 2009).

**Jutta Brunnée** (University of Toronto) published “Climate change, global environmental justice, and international environmental law” in J. Ebbesson and P. Okowa, eds., *Environmental Law and Justice in Context* (Cambridge: Cambridge University Press, 2009).

**Simon Caney** (Oxford University) will co-edit, with Derek Bell, a topic issue on *Morality and Climate Change* for *The Monist*. Submission deadline is 31 July 2010. See calls for papers.

**James Garvey** (Royal Institute of Philosophy) reports that the institute will host a series of lectures on environmental topics (including his Climate Change and Civil Disobedience), which will be published by Cambridge University Press. (see below for full schedule)

**Thomas Heyd** (University of Victoria) published *Encountering Nature: Toward an Environmental Culture* (Ashgate 2007), and edited, with J. Clegg, *Aesthetics and Rock Art III Symposium* (British Archeological Reports, 2008). He co-chaired the session “Culture, Values, and World Perspectives as Factors in Responding to Climate Change” at the Copenhagen science congress on climate change 10-12 March 2009.

**Rafaela Hillerbrand** (RWTH Aachen University) published “Anthropogenic Climate Change: Scientific Uncertainties and Moral Dilemmas” together with climatologist M. Ghil in *Physica D: Nonlinear Phenomena* 237 (2008): 2132-2138.

**Nicole Hassoun** (Carnegie Mellon University) has published two articles on the issues of Climate, Free Trade and Environmental Ethics. “Free Trade, Poverty, and the Environment,” appeared in *Public Affairs Quarterly*, 22, 4: 353-380 and “Free Trade and the Environment,” will be forthcoming in *Environmental Ethics*, 31.

**Jeff Huggins** has developed a “DIY” (Do It Yourself) probe of the morality-sustainability relationship called "The Morality of Sustainability: A DIY Exploration," which can be found in at <http://obligationsofreason.com/files/mos.pdf>. (See below for more information.)

**Ruth Irwin** (University of Auckland) published *Heidegger, Politics and Climate Change* (London: Continuum, 2008). She edited the anthology *Climate Change and Philosophy*, forthcoming with Continuum 2009.

**Catriona McKinnon** (University of Reading) has a paper “Runaway Climate Change: A Justice Based Case for Precautions” forthcoming in *Journal of Social Philosophy* and is editing a forthcoming special issue on *Climate Change and Liberal Priorities* for *Critical Review of International Social and Political Philosophy*.

**Kathleen Dean Moore** (Oregon State University) and Michael P. Nelson (Michigan State University) are co-editing a volume titled *For All Time: Our Obligation to the Future*, which will boast an impressive list of contributors and advance the thesis that science has given us a grip on the fact of climate change, and now those who think through value are weighing in, connecting the facts up to a call for action.

**Adrian Müller** (University of Zurich, SOI) has recently completed two items related climate change. “Sufficiency – Does Energy Consumption Become a Moral Issue?” appeared in the *Proceedings of the ECEEE 2009 Summer Study*, [Paper 1083] and “Emissions Trade,” will appear in: Spreng, D., et al., (eds), *Meeting Global Energy Challenges: Towards an Agenda for Social-Science Research*, Springer, [forthcoming]. Dr. Muller is currently writing a paper on Technology Transfer, Climate Change and Development, planned to be published in: Ekekwe, N. (ed), *Nanotechnology and Microelectronics: Global Diffusion, Economics and Policy*, IGI Global, The African Institution of Technology AFRIT.

**Martin Schönfeld** (University of South Florida) is editing issues on *Climate Ethics* for *Journal of Global Ethics* and for *Essays in Philosophy*. Forthcoming are “Amerigenic Climate Change: an Indictment of Normalcy,” *Environmental Ethics for Canadians*, ed. Byron Williston; “Climate Philosophy and Cognitive Evolution,” *Climate Change and Philosophy*, ed. Ruth Irwin; “How ‘Real’ is Daoism? Making Sense of Laozi, Kant, and Climate,” *Wu Wei: Essays on Taoist Philosophy*, ed. Lik Tong. In 2008 also appeared “The Kantian Blueprint of Climate Control,” in *Global Warming and Climate Change: Ten Years after Kyoto and Still Counting*, ed. Velma Grover, Science Publishers; and “The Green Kant—Environmental Dynamics and Sustainable Policies,” in *Environmental Ethics*, ed. Paul Pojman and Louis Pojman, 5th edition, Thomson/Wadsworth Publishing.

**Carmen Velayos** (University of Salamanca) published *Ética y cambio climático* (Madrid: Desclée De Brouwer, 2008); see description here: <http://dialnet.unirioja.es/servlet/libro?codigo=315805>

**Byron Williston** (Wilfrid Laurier University) is currently putting together the collection *Environmental Ethics for Canadians* (Oxford University Press, forthcoming 2010).

## Blog Roll

[Blistered Orb](#) [Blister Data](#) [Climate Ethics](#)

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## Calls for Papers

### Essays in Philosophy (2010)

The biannual journal [Essays in Philosophy](#) calls for papers on [Climate Ethics](#) (open & scroll down). Submission deadline is 1 October 2009. Publication date is January 2010.

Specifically, we are interested in three questions. (Authors should probably pick just one.)  
Does climate change necessitate a re-evaluation of values, and if so, in what way?  
Does the fact of a budding climate ethics serve to falsify the claim of naturalistic fallacies?  
Is anthropogenic climate change an opportunity for social evolution, and if so, how?

You find submission guidelines [here](#).

Please send submissions to the General Editor, David Boersema (Pacific University) at [boersema@pacificu.edu](mailto:boersema@pacificu.edu). Do not send submissions to the topic editor, Martin Schönfeld (University of South Florida), as manuscripts will be blind reviewed.

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### The Monist (2010)

The international quarterly journal of philosophical inquiry [The Monist](#) calls for papers on [Morality and Climate Change](#). Submission deadline is 31 July 2010. Publication date is July 2011. The editors invite papers on the following themes:

What criteria should we use to assess the impacts of climate change? Can cost benefit analysis capture all the ethically significant impacts? Do current generations have an obligation to future generations not to bring about long-term dangerous climate change? Is discounting the well-being of future generations obligatory or permissible or indefensible? Some potential impacts of climate change are not known with certainty and this raises the question of how we should respond to risky or uncertain impacts on the earth's climate. For example, should current generations adopt a version of the 'precautionary principle' when considering whether to engage in activities which produce high levels of greenhouse gases? Who should bear the burdens of dealing with global climate change? How should the right to engage in activities which emit carbon dioxide be distributed? Is carbon trading just and, if so, under what conditions? Are some entitled to compensation or reparations for the harmful effects of anthropogenic climate change? In addition to the above, we face ethical question pertaining to how decisions about climate policy should be taken.

Please send submissions to the advisory editors, Simon Caney (Oxford) at [simon.caney@magd.ox.ac.uk](mailto:simon.caney@magd.ox.ac.uk) and Derek Bell (Newcastle) at [derek.bell@ncl.ac.uk](mailto:derek.bell@ncl.ac.uk)

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## Upcoming Meetings

### Potsdam, Germany (2010)

The Potsdam Institute of Climate Impact Research and the European Forum for the Study of Religion and the Environment invite to the 3rd Workshop of the series Religion in Dangerous Environmental-and-Climatic-Change 11-13 January in Potsdam, Berlin, Germany.

Information at <http://www.hf.ntnu.no/relnateur/index.php?lenke=ridecc.php>

### Aarhus, Denmark (2009)

Aarhus University, Denmark: Conference on Climate Change as Challenge for Intercultural Inquiry on Values. An international, interdisciplinary research conference, 3-6 Nov 2009

The aim of the conference is to compare conceptions of ecological responsibility across cultures (and religions), and to explore the role of intercultural value studies for the development, communication, and practical implementation of new models of future-oriented and collective responsibility. This is the first of a series of five biannual conferences on intercultural dialogue on values, as a means of proactive conflict mitigation and social innovation. The conference will conclude with the bestowal of the Global Dialogue Prize.

Decisions on papers will be made by July 1. The program will be announced shortly afterwards

Conference webpage and further information at [www.globaldialogueconference.org](http://www.globaldialogueconference.org)

Information about the prize at [www.globaldialogueprize.org](http://www.globaldialogueprize.org)

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## Conference Reviews

### Climate Congress, Copenhagen, 10-12 March 2009

Philosophy and ethical concerns, along with social and natural science topics, were represented at various sessions during the recent Copenhagen science congress on Climate Change: Global Risks, Challenges and Decisions, 10-12 March, 2009. A transcription of the final plenary is attached.

Philosophy was particularly present in two sessions: "Culture, Values and World Perspectives as Factors in Responding to Climate Change," chaired by Karen O'Brien, University of Oslo and Thomas Heyd, University of Victoria, and in "Equity between Humans and the Rest of Nature," chaired by Dale Jamieson, New York University and William Schlesinger, Cary Institute of Ecosystem Studies.

"Culture, Values and World Perspectives as Factors in Responding to Climate Change" featured papers by Robin Attfield (UK), Climate change: the ethical dimension, Carien AC de Jonge (The Netherlands), HJC Brezet on Shedding a new kind of light: dealing with climate change by shifting our most fundamental perspective, and posters by Dieter Gerten (Germany) The noosphere in earth system analysis, and Edward Howlett Spence (The Netherlands) A neo-Epicurean approach to a sustainable good life in a world of climate change, among others.

"Equity between Humans and the Rest of Nature" featured Mikko Yrjönsuuri (Finland), Human happiness - friend or foe?, Kyle Van Houtan (USA), Extinction, suffering, and the cruciformity of the cosmos, and Anders Melin (Sweden), Climate change and biodiversity preservation: a non-anthropocentric perspective, among others.

Congress participants expressed great urgency in coming to terms with workable mitigation and adaptation measures, and harboured hopes that their discussions would inform the decision-makers to be brought together at the next COP 15 climate change negotiations.

Conference link: <http://climatecongress.ku.dk/>

-- Thomas Heyd (Victoria)

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## Conference Reviews 2

### Society for Human Ecology Conference

Bellingham, 10-13 September 2008, Western Washington University

Ten stimulating papers were presented at the Climate Philosophy Symposium [Thom Heydt organized the symposium—M.S.]. This meeting was part of the XVI International Conference of the Society for Human Ecology, "Integrative Thinking for Complex Futures: Creating Resilience in Human-Nature Systems" at Western Washington University in Bellingham.

The basic assumption underpinning this symposium was that all personal and societal change happens within frameworks of interpretation, valuation and choice by subjects who see themselves as actual or potential agents. As such, the symposium sought to pursue an exploration of some of the cultural dimensions of individual and social factors that may lead to mitigation to and adaptation to climate change. The presentations by six philosophically trained speakers were complemented by three social scientists, and a very participative audience from a great variety of fields.

The on-site organizers of the Conference from University helped us apply a mixed teleconferencing/DVD format for two talks by participants from the United Kingdom. These arrangements were made in order to help them lower the carbon footprint, and we hope that this way of being 'present' at conferences will be adopted more frequently from now on at conferences, especially those featuring international participants.

The papers by the philosophers discussed broadly conceptual and ethical perspectives, as well as particular policy concerns. So, after a short introduction to the very limited role of climate in philosophy by Heyd, Robin Attfield presented a discussion focused on equity in climate negotiations. He argued for the proportioning of emission quotas to population in such a way that we would also avoid falling prey to the charges of anthropocentrism and the neglect of future generations. James Garvey, author of the excellent *Ethics of Climate Change* argued for personal commitment to action, even if each person's contribution would seem to be insignificant, from the perspective of moral outrage.

In the second part of the Symposium, Heyd offered an argument for addressing the prudential and ethical responsibilities arising from climate change at the meta-level if there is reason to suppose that one's efforts at the first order level may be ineffectual. Marcel Cano attributed the presently problematic interactions between humans and the natural environment to the prevalent 'cosmovision.' These talks were followed by several presentations that brought in empirical approaches.

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## Conference Reviews 3

### Society for Human Ecology Conference (cont.)

Bellingham, 10-13 September 2008, Western Washington University

Rosalind L. Hunter-Anderson described in detail the cultural responses of the inhabitants of Guam to climatic variability, and drew some conclusions on the relation between occupation patterns of land and rainfall that may be of interest to present societies. Kathleen Halvorsen presented a paper on the link among accurate knowledge, concern about climate change, environmental orientation, and political beliefs in terms of their significance for personal choices regarding energy usage and purchase, and, ultimately, mitigation strategies. Reuven Sussman followed up with a report on an experimental study that showed that the dichotomy urban-rural is of significant relevance when we are concerned about cooperative behaviour in commons dilemmas, and he drew implications from this for cooperation in the light of treating the atmosphere as a common sink for greenhouse gases.

After this two more philosophically oriented papers followed. Adrian Parr addressed climate change in the context of disaster relief, and pointed out how power differentials are translated to subaltern groups through imposition of culturally inadequate design of shelter. Finally, Martin Schönfeld argued that climate change offers philosophy a unique opportunity to open up the possibilities to think through a more holistic, dynamic metaphysics.

In her closing commentary Heather Lazarus, who has worked on the cultural responses to climate change in Tuvalu, Fiji, suggested that local ways of detecting climate change should be taken into account, along with those of mainstream science, and she emphasized the importance to taking into account the structural vulnerabilities of diverse sectors of societies. Though a multi-disciplinary symposium such as this one represents an important challenge both for speakers and listeners, the format proved itself workable in light of the concurrence of the event and the praise that it received from audience members. We are presently planning to publish a selection of the papers presented in Human Ecology Review.

Conference link: [Cultural Dimensions of Climate Change](#)

-- Thomas Heyd (Victoria)

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## Conference Reviews 4

### Climate Ethics Conference: “Human Flourishing in Global Warming” Clemson, SC, Clemson University, 5-7 September 2008

At the time of the conference on climate change at Clemson, there was a strange confluence of events. Sarah Palin had just given her acceptance speech at the Republican National Convention. Palin has repeatedly denied that climate change is man-made. Tropical Storm Hanna was about to hit the border between the Carolinas. Hurricane Ike was churning violently in the ocean. Those who had to fill up their cars a week after the conference certainly know where Ike eventually landed. [Hurricane [Ike](#), underreported by the corporate media, was the third most destructive Atlantic hurricane ever, causing more than US\$ 30 billion in damage in the Bahamas, on Cuba, and the US; it had the highest integrated kinetic energy of any Atlantic storm in history; at landfall in Louisiana, it damaged the coastal refinery infrastructure, causing gasoline shortages throughout the southeastern US. – M.S.] And I had to drive over 300 miles to reach Clemson from my home in Wilmington. I always imagine that those who participate in conferences on climate change feel slightly complicit in contributing to this global problem. After all, many of us travel from afar to attend these conferences. We have to fly or drive in most cases.

Many of the participants adopted an Aristotelian viewpoint to tackle this thorny climate problem. Needlessly killing animals is a vice. Denying climate change is a vice. Supporting the coal industry is a vice. One of the presenters, Stephen Gardiner (from University), took a utilitarian approach. He argued that we need to spare the environment from further degradation or we will be compelled to employ geo-engineering projects to correct the damage we have done. Martha Nussbaum (from) was the keynote speaker. She talked about the moral status of animals and the obligations that we have towards them. I took a neo-Kantian approach to the problem of climate change. We need more than a list of vices to compel us to combat the destruction of the planet. I view environmental restoration and protection as obligations that must be fulfilled by all. I think I bored the Aristotelian contingent with my deontological musings. In the end, I was glad to have attended the conference. We were all like-minded people. We differed slightly on solutions. Some want to pursue more nuclear power. A couple of participants were hoping that one day, wind turbines will sit atop old oil platforms in the Gulf of Mexico. I was still apprehensive, worried that this might be yet another conference where solutions are proposed that will not be implemented for years to come.

Conference link: [Human Flourishing & Restoration in the age of global warming](#)

-- Melinda Rosenberg (University of North Carolina-Pembroke)

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## Conference Reviews 5

### World Congress of Philosophy Seoul, 30 July-5 August 2008

There were at least two places in the Program at which climate change became a topic for discussion. First, there was the Roundtable on Climate Ethics. As it turned out, the Congress organizers had failed to notify the listed participants that the roundtable had been approved for the program. [The Roundtable had been planned by a volunteer at Hawaii for the Institute of Field-Being who failed to communicate with the organizers at Seoul; prospective participants were led to believe the Roundtable wouldn't happen. — M.S.]. Martin Schönfeld had asked me to drop in at the posted place. I showed up and discovered that a dozen people had gathered.

This is where I took the initiative and offered to read a draft of a paper on “Philosophy and Climate Change” that I had along with me, and to lead a discussion thereafter.

My paper tried to open the purview of philosophy and climate change beyond the mere concern with policy, important as it is. I emphasized the need to think of climate change from the perspective of vernacular experience, which always is subjective, personal and culturally modified. In the ensuing discussion, Markku Oksanen (from Finland) suggested we need to make a critique of the hidden interests that underlie the whole phenomenon of climate change. In particular he was concerned about geo- and weather-engineering projects, which may well be directed away from certain areas and to others so as to favor well-to do sectors of the world population to the detriment of the rest. This, he suggested, calls for a “weather ethics.” Gert Geminne (from Belgium) proposed that the information frameworks considered relevant by science are different from those considered relevant by politicians, and that this is worth keeping in mind. Harald Lemke (from Germany), furthermore, proposed we have to extract climate change from the purely scientific discourse and see it in the context of social justice.

After this I presented the paper “Culture and Climate Change” in the Environmental Ethics session. It tried to develop in more depth the notion that culture is a relatively neglected aspect of climate change processes, and that the humanities and social sciences would do well to focus more on this aspect of the phenomenon, both in terms of generating willingness to undertake mitigation and adaptation measures.

Conference link: [Climate Change at the World Congress of Philosophy](#)

-- Thomas Heyd (Victoria)

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## Teaching Questions

Here are some essay questions for undergraduate philosophy classes, sent in by Jeff Huggins:

Imagine a spaceship with thirty women and men aboard, lost in space, with no Earth or other home left. The inhabitants constitute the only human community. Imagine that the spaceship contains a sufficient—but not unlimited—quantity of life’s necessities, e.g., air, water, soil, and other life. What do you learn? What does this situation suggest about morality and its relationship to sustainability?

Consider Dylan Thomas’s great poem, “The Hand That Signed the Paper”. The last line is, “Hands have no tears to flow.” What does this poem help us see?

Consider the question that Shakespeare’s Hamlet put so well: “To be, or not to be, that is the question.” I’d also suggest reading Albert Camus’ acknowledgment of this question’s fundamental importance in the opening paragraph of his book, “The Myth of Sisyphus and other essays”, under the heading “Absurdity and Suicide”. Consider that this question can be posed at the human-species level as well as at the individual-person level.

Now imagine yourself as someone else—e.g., in her shoes. Imagine trading places. Go deep, and be as real as you can. What does this tell you about morality? While you’re at it, reflect on Daniel Goleman’s point in the last sentence of his book, “Social Intelligence: The New Science of Human Relationships”: “The social brain’s wiring connects us all at our common human core.”

Consider: Why do people say that it doesn’t make sense to “bite the hand that feeds you”, especially if that “hand” is reasonable and basically responds to your own actions? And what do we mean by saying, “he pulled the rug out from under me”?

Consider this, from the Dalai Lama’s book, “Ethics For The New Millennium”: “And because, as we have seen, our interests are inextricably linked, we are compelled to accept ethics as the indispensable interface between my desire to be happy and yours.”

Consider this from Bertrand Russell: “Some people would rather die than think; and many do.” Examine the parallelism between the following two statements: Character is destiny.

(Heraclitus)

Morality is most foundationally “about” the sustainable survival of the human species (accomplished in a way that also satisfies other important considerations, of course, including our interdependent interrelationship with the biological community).

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# Royal Institute of Philosophy Lecture Series

Environment Lecture Series (Oct 09 – Feb 2010)

October 16th – **Holmes Rolston III**: The Future of Environmental Ethics

October 23rd – **Robin Attfield**: Beyond Anthropocentrism

October 30th – **Warwick Fox**: Towards a General Ethics – Human Relationships, Nature and the Built Environment

November 6th – **Brian Garvey**: Darwinism and Environmentalism

November 13th – **Emily Brady**: Environmental Aesthetics

November 20th – **Baird Callicott**: The Temporal and Spatial Scales of Climate Change and the Limits of Ethics

November 27th – **Chukwumerije Okereke**: Global Justice and Global Environment Justice

December 4th – **Allen Carlson**: The Aesthetic Appreciation of Nature and Environmentalism

January 22nd – **James Garvey**: Climate Change and Civil Disobedience

January 29th – **David Wiggins** tba

February 5th – **Cameron Hepburn** tba

February 12th – **Dieter Helm** tba

February 19th – **Eric Swyngedouw**: Climate Change as Post-Political and Post-Democratic Populism

February 26th – **John Adams**: Managing the Environment in a Hypermobile world

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## China and Global Climate Change Conference

Lingnan University, Hong Kong, China, 18-19 June 2009

The Centre for Asian Pacific Studies (CAPS) and the Environmental Studies Programme (ESP) at Lingnan University, Hong Kong, are jointly organizing a conference on "China and Global Climate Change." The conference will address the problem of how to reconcile China's growing greenhouse gas emissions with the Chinese government's unwillingness to join binding international commitments to reduce those emissions.

[\[http://www.ln.edu.hk/caps/conference.php\]](http://www.ln.edu.hk/caps/conference.php)

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## IARU Climate Congress

Closing Plenary Remarks, Transcription, 12 March 2009  
Copenhagen, Denmark

Transcribed by **Paul Baer** (panel co-chair of Session 10)  
[baer@stanford.edu](mailto:baer@stanford.edu)

Draft 1.0

Paul Baer notes: **Katherine Richardson** (KR) began the panel by reading the “key messages,” which can be viewed [here](#). Then she asked the panelists – **Stefan Rahmstorf** (SR), **Will Steffen** (WS), **Lord Nicholas Stern** (NS), and **Dan Kammen** (DK) to respond to the key messages. After that, she invited the Danish Prime Minister Mr. **Anders Fogh Rasmussen** (PM) to respond to the messages. Next there was a dialogue between the panelists and the Prime Minister, with closing remarks from the Prime Minister.

*This draft begins with the response of the first panelist, Stefan Rahmstorff, to a question posed by Katherine Richardson. I will transcribe Dr. Richardson's delivery of the key messages, which elaborated somewhat on the prepared text, as well as her transition to the comments, as soon as I get the opportunity. Note also that there are still a few unclear transcriptions, marked by yellow highlighting; as I was unable to rewind the webcast to make clarifications, it will take me a while to get back to them. And, also, I have made a few – very few – minor changes to reflect the clear intent of the speakers in a more grammatical fashion.*

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SR: Yes, I'd be happy to start it off. First of all, not everything is worse than expected. So that's the good news. The global temperature is actually rising just as expected. If you look at the trend over the last twenty years or so, of course there is natural variability, around that trend, there are some warmer years like 2001 to 2005 were above the long term trend, and then 2008 is a little below the long term trend. But global temperature is basically rising as expected, and that's very reassuring to me as a climate modeler, because we think global temperature is easy, we understand it well, it's simple energy balance, so we shouldn't be too far off.

But there are other components of the climate system that we don't understand that well for example the sea ice behavior, the continental ice sheet behavior, the sea level, and unfortunately, in these components, where we don't understand them so well that we can confidently compute them, things seem to go faster and worse than we had expected so far. For example the shrinking arctic sea ice is actually declining much faster than in any of the climate models, and we also see that sea level over the last 20 years or so is rising about 50% faster than the climate models have projected.

Another reason for concern is that if you look at the history of this planet, climate changes – the natural climate changes in Earth's history, we find that past warm climates were significantly underestimated by models, for example the Pliocene, it was the last time in Earth's history where it was significantly warmer about three million years ago due to higher greenhouse gas levels. We can't quite reproduce how warm it was back then, especially in the higher latitudes. And we also find that climate changes in earth's history often have been very abrupt, that's another thing that we can't quite reproduce in the models, and at this conference I've seen some interesting evidence as to why some aspects of the climate in the climate models may be systematically too stable, so that in the real world things might actually be more unstable than in our models. So I think I leave it here for the moment.

KR: Will, would you have anything to add? And you might want to maybe say a little bit about, we say that temperature rises above 2°C will be very difficult for societies to know what to deal with.

WS: Yes, I think that one of the aspects again that Stefan referred to that is reassuring because we think we understand and that models predict the fact that extreme events will increase in frequency and intensity as the climate shifts towards higher temperatures and more energy basically at the earth's surface. We're starting to see this now, we see it in terms of increasing floods in many parts of the world, increasing heat waves, the 2003 heat wave in Central Europe is a classic example. But there have been others. There was a fairly bad one recently in southeastern Australia We see droughts and drying in many parts of the world. Ironically the planet overall is getting wetter. And again, that's exactly what you'd expect as temperature goes up – increasing evaporation, increasing water vapor content in the atmosphere and increasing precipitation. It's very uneven. And one of the points that I want to make, Katherine, is that human societies have adapted to the patterns of climate that we've grown used to in the Holocene. So, We're used to placing agriculture where there is water now. We're used to placing cities in general where there are water supplies. So even though the planet's getting slightly wetter, the patterns are

shifting. And certainly some areas, in general those areas that are dry now are getting dryer. Droughts are getting longer; they're more intense because they're hotter. And this is placing pressure on urban water supplies, placing pressure on agriculture in some areas, and so on. So that's one aspect that I think if we go above 2 degrees these extreme events will get worse.

The second aspect is one Stefan referred to. I think we'll greatly increase the possibility that we could trip some of these so-called tipping elements. Now there are small ones that are still reasonably significant, in terms of droughts and so on, but there big ones, like monsoon systems in South Asia, like the Amazon Basin rainforest and so on, which according to our best understanding now become more vulnerable, the higher you go above two degrees. Now we don't know for sure but you can view the certainty in a way as something you need to handle in terms of a risk analysis. These are significant changes. Well more than one billion people rely on that South Asian monsoon. So if that starts to falter, that's an extremely significant change in the earth system. Those are a few of the examples, Catherine.

KR: You brought up the question of risk, and I think it's worth noting at this point that a lot of people in here including a lot of the journalists here have said, "Where are the skeptics? How come the skeptics aren't here? Why didn't you invite them?" Well first of all, we didn't really invite anyone, except the few plenary speakers that we've had, but the IPCC report actually says for the first time that they believe its very likely – at least a 90% chance – that the climate change we're seeing at the moment is caused by humans. And I guess you could say, the message that's come across here is, we have no reason to dispute that conclusion from the IPCC, and it looks every bit as bad as the worst case scenario that they identified there. So that's not even really very interesting. The good thing about this meeting is that we've got more data; we can go back and check, we can check the numbers; we can look where we are, according to where the IPCC thought we might be going. So far so good, no new surprises, we have a problem. What's really interesting, I think, is what we can do about it. So I'd really like to turn a little bit now to try and ask, what can we do about it? I mean, we hear all the time that "we've got an economic crisis, now guys, can't we just wait and put this on the back burner?" So, going into the key message about the fact there's no excuse for inaction, would you, Lord Stern, like to cast yourself over that one?

NS: There is indeed risk to inaction. We do understand the risks that we're running. We can't predict these things with certainty, but it's very clear that the risks are big. And we know that by cutting emissions and the concentrations that result from them, we can reduce those risks drastically, and we can look at the costs of cutting, and we can look at the overall patterns of growth and development which are likely to emerge. And we can come to a judgment as to whether we think that those actions are worthwhile in terms of the reduced risks that they bring. When we do that, the answer to the question I think is overwhelming. For one or two percent of world GDP for a few decades, we could keep overall concentrations in the atmosphere below 500 parts per million of CO<sub>2</sub> equivalent, and then, over time, bring it on down from there. The kind of reduction in risks that would bring, I think, most people, given the kind of description you can give of a world at 5 degrees centigrade, which would involve huge, hundreds of millions of people moving, and as a result, deep and protracted world conflict. We can describe the magnitude of those risks better, as a result of your work, and we know that we can cut the probabilities of those risks very drastically for relatively modest expenditures.

But looking beyond that, what sort of growth would it bring? This would bring low carbon growth. It's very attractive. It's cleaner, it's quieter, it's more energy secure, and it's more biodiverse. And it's growth. High carbon growth kills itself. First from the high prices of hydrocarbons, and then, more fundamentally of course, there's a very hostile climate that it creates. If we look forward to the next 20 or 30 years, the big growth areas will be low carbon technologies. This will be the story of the railroads, and electricity, and IT. But probably in terms of growth opportunities, still bigger. So if we look at the reduction in risk that we can buy for modest investment, and if we think further of the kind of growth path it can generate for us, I think that we should see the action as actually rather attractive, and indeed the

inaction as inexcusable. This is real opportunity here, and it's particularly an opportunity when we've got before us two or three years of a depressed world economy, or a recession, or a slowdown, whatever description you give. Resources over these next two or three years will be cheaper than they are likely to be looking into the future. Now's the time to get the unemployed of Europe working on energy efficiency, on making our houses more energy efficient. There's so much that we could do, and at the same time, lay the foundations for the kind of growth story [lies ahead] that I've had. We must not come out of this downturn by sowing the seeds of the next bubble, and that's what we did last time. We came out of the dot com bubble and we sowed the seeds of the housing bubble. We can do it very differently. We can come out of this one, and lay the foundations for a very attractive form of growth. So it really, really is inexcusable not to take the action.

KR: So we need to invest the money, and we can get something out of investing the money, but Dan, what should we invest it in?

DK: Well that's what I think is so frustrating about this. We've heard a number of world leaders from international groups such as the UN Environmental Programme, to a number of centers around the world all highlighting that this is an opportunity to really invest in that green new deal. And the ironic thing is that we've been hearing this message from engineers, physicists, economists, policy makers for a great deal of time, that energy efficiency, as Lord Stern mentioned, is not only a sort of a suite of technologies and practices that saves you on carbon, but it also saves you on money. And in a downturn, there's sort of no better combination than reinvesting in human capital, generating new jobs, and also generating a process that leads into additional technologies. It's clear from the scientific base, that while we've begun to make light bulbs better, and water heaters better and smarter windows that themselves can tint at the right times etc., that we haven't even begun the integration of efficiency with the wave of new renewables, using smart sensors that removes the need for the conduit in many buildings. All of this is the sort of stuff that you put together exactly when you are investing in a green new deal, and many of these things have remarkably quick payback times. The rates of return of these projects can be remarkably fast when efficiency and these new clean renewables are put together.

The fact that we aren't doing it already is frustrating, and doesn't make a lot of sense, and what it says is that we're really not learning. Econ 101 seems to be something that we all are failing, and maybe we should go back to your class a few times [gesturing at Stern], or a few hundred times. Because we have a great deal of these experiences. The fact that green jobs is not [sic] something that we talk about as an abstraction; we observe it in a variety of settings. And we don't just observe it in rich countries, and rich cities. We observe it in poor communities, where investing in local technologies like better cook stoves, locally hand-done wind turbines, it really has a variety of applications in exactly the places we need it.

And so, the technologies themselves are there, the practices are there, the economic opportunity is there. It's perfectly clear that we are failing so far the challenge to reinvent systems science. That we need to put these things together, and we need to value these multiple aspects. So there's a number of details, but the real story is that we have a great number of these technologies and practices in an early form right now. We really need to put them into practice. And the countries that are most concerned, and the communities, absolutely need to step forward to take the lead.

KR: If I could follow up a little bit on that, now we for many generations it feels like now, but for at least as long as I can remember, somebody's been trying to give me a guilty conscience because I don't turn off a light every time I go out of the room. Is that the way forward? I mean, how do people get into this equation? Is it my fault we're in this mess right now, and if I act as a person, will something happen now, or am I completely meaningless in all this?

DK: well we tried [in the] energy crisis in the seventies when part of the solution at least in the popular historic press was that we would essentially put on an extra cardigan and sit by the fire. We would somehow reduce quality of life. I think the opportunity now that we are seeing is that, as Lord Stern said, we can actually invent this new wave of prosperity if we really get going on it. We have to be serious, we have to integrate solutions, and we have to send the message to the private sector that this is the long term new direction, this is not the short-term fad, we're not going to see research and development budgets rise briefly as we've seen wonderfully in the United States in the last few months, and then tank two years or three years down the road. In fact, I'm most heartened by what I think is becoming the hallmark of the new Obama administration, and that's a new pragmatism, combined with reprioritizing science. And that combination is exactly what you need to do if you essentially want to have a new industrial revolution but this a very clean one. So my hope, and actually I think that the technology bears it out, it's not a case of, do I need to now remember to turn of the light bulb every time. Of course you do, but our mix of technology, and market signals, give us ways to do it that can be profitable from a whole variety of very small, mom and pop operations, to medium sized companies to the big ones, and it can be an equally good message for people in poor developing countries and the more affluent ones. And we have to rise [sic] all boats here. I guess the melting ice and the rising boats may send a tricky message, but it has to be one that is not increasing the equity problems. We have to decrease that injustice in the world right now.

KR: Does anyone else have a call on who "we" is in this? This is what's worrying me. It's easy enough to sit here and say "we should, and we should," but who's we? Is it me when I turn off the light, or is it the business, or is it the prime minister? Who's we? Lord Stern?

NS: There are many parts to the "we," but I would follow up what Dan Kammen just said. The two big challenges of this century are fighting world poverty and managing climate change. And we succeed or fail on those two together. If we don't manage the risks from climate change, then we will create a physical climate so hostile, that the hard-won gains of development are very likely to be reversed. If on the other hand, we try to manage climate change by putting barriers in the way of people raising their incomes in the next two or three decades, we will fail to put together the coalition, indeed we will deserve to fail, to put together the coalition which is crucial. So the "we" is I think first all countries moving together with particular respect for the challenges that the developing world faces in moving to low carbon growth, and therefore a big obligation on the rich world to support the climate change action plans of the poorer parts of the world. That way we can put together a real coalition, a partnership. But it's also true, going down, right down to you, Kathy, as you asked us to do, that people's understanding of responsible behavior does make a difference. My generation in the UK was told that drinking and driving was dangerous. You wished they'd noticed before, but there were cries of "it's a violation of human rights" to stop the ordinary person – it usually was the ordinary man, because it was a man – the ordinary man going down to the pub, having a drink and driving, or a few drinks, and driving home. And that to interfere was a fundamental restriction on personal freedom.

That was a perspective of rights and responsibilities. That has changed. How has it changed? It's changed through information. It's changed through discussion. And discussion is crucial. And with discussion, with information, with challenge, people change their views of what's responsible. So the sticks and carrots, the prices and taxes that we economists go on about, and should go on about – ignore them at your peril – but they're not the only part [of] the story. And an understanding of responsible behavior comes from public discussion. It's part of democracy. It's part of political leadership. Part of participation. And I do think that's an important part of the story.

KR: Will – do you have a feeling about who we are?

WS: I just want to make one further comment to follow on from those. When we go home after a very exciting and enthusiastic conference like this, and we hit the reality of getting back in our own settings

and see everyday life again, it sometimes seems impossible to make the kinds of changes Lord Stern and Dan are talking about. But on the other hand I think there's reason for optimism. Because just like in natural systems, where things are often non-linear, and you hit a tipping point and then suddenly the system shifts, I have a strong feeling this happens in human systems as well. And that as we have the sort of discussions that Lord Stern referred to, I think you reach a point where things simply become accepted. You don't smoke in inside places anymore. And that was probably even more sacrosanct than driving home when you were drinking. You went to the pub and had a cigarette as well as a beer. And we don't do that anymore, and this happened very quickly. And people said that was going to be the end of pubs – it hasn't been the end of pubs. So I think that ideas can go through society exceptionally quickly. I sense that after a few false starts, we're getting to the point now where we could see this tipping element reached, and then things may happen faster than we scientists think, and a lot of our dire projections may be rendered as deep history, hopefully just a decade down the tracks. So [what] I'm looking forward to nine months from now is perhaps, looking back, saying, well, Copenhagen 2009, that was really the turning point. It wasn't all solved there, but that's when humanity really decided they weren't going to tolerate this hostile climatic future, that we might face. So I'm guardedly optimistic that you can see strongly non-linear effects in human behavior as well as in these natural systems.

KR: Mr. Prime Minister, I'm wondering after this round here where we've presented our findings and a few of our heartfelt feelings, whether you'd like to make some kind of a comment as to how maybe this could be used?

PM: Thank you very much Katherine. And thank you very much for giving me the opportunity to participate in this closing session of this scientific conference and for providing political decision-makers with an update of our knowledge base on climate change. I acknowledge the many scientists present at this conference. It is not only impressive, but it also shows the determination in the scientific community to address one of the most challenging issues of our time.

From my point of view, your contribution is an essential part of the preparations for the climate change conference, as an input to the negotiations within these very walls in December. Your input is very helpful, and today you have presented me with some key messages, and I would like to give you a first political response and some reflections. You asked, Katherine, who is, or who are, "we". Well I think "we" is each individual, but we need a political framework to operate within. And that's our task, to create this political framework.

Your first key message could be translated into "urgency". I'm pleased to note that you build upon and elaborate the key findings of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. The key message is that recent observations confirm that the worse case IPCC scenario is being realized. This statement must of course be taken into consideration when we set the targets for the reductions of greenhouse gas emissions.

You point to the acceleration of the climate trends. The longer we wait, the worse it gets. At the UN climate conference in Bali in December 2007, a two-year roadmap was adopted. Copenhagen is the target. Some people and countries question whether it is realistic to agree to a global deal in nine months. I say, we must. Waiting a year or two will only make the decisions even tougher. I say, we stick with the roadmap, but we also have to realize that this will demand intense negotiations in 2009, and the very close involvement at the very highest level of government.

The second key message is "direction." You point to the serious consequences of climate change, not least to vulnerable societies. In Copenhagen, we must come to an agreement that limits global temperature rise to two degrees Celsius. This means at least 50% reductions in 2050 compared to 1990. The IPCC has already made the recommendations, Nick Stern has made the calculations, and from what I

hear today, we may have to go beyond 50%. Many developed countries have accepted the target, including their own obligation to reduce by 80% in 2050 compared to 1990. Most recently, president Obama has committed to this ambitious long-term target. I hope the whole world will join in the common endeavor and set 2° as the ambition for a climate deal in Copenhagen.

The third message is “action.” You point to the problem of delaying action. 2050 is more than 40 years away. I do know that in particular maybe politicians have to be very careful in announcing their retirements, but I think it is a reliable prediction that most of today’s leaders will be out of politics by 2050. But the task is not to leave for the next generation. We have to start now if we want to reach the goal in 2050. The European Union has committed to 30% reductions by 2020 as part of a global agreement. Other industrialized countries are still to commit to comparable effort. Developed countries must lead the way. They carry a special historical responsibility. But, as we all now, even if all industrialized countries cut their total emissions to zero, we would not meet the target in 2050. Therefore, developing countries and primarily the emerging economies will have to take actions as well. And I’m encouraged to see the determination of major developing economies to address the problem and initiate the transition to low carbon economic growth. Overall, these countries will have to make an effort reducing their emissions to some 15 to 30% under a business as usual scenario.

Your fourth key message is “fairness.” You point to the fact that the worst consequences are likely to occur in countries with least emissions. Adaptation remains a top issue in the negotiations. Financial and technical support to poor and vulnerable countries is essential, if we want to avoid unforeseen social and political clashes in the future. The wealthier countries must assist them in capacity building, and in implementation of sustainable adaptation strategies. Furthermore we must find a financial mechanism to fund mitigation efforts in developing countries. That includes forestry as one of the key sectors. I would say that cost-effective, market-based systems are most likely to survive and thrive in the long run. It’s also the most likely to provide adequate and truly additional financial resources. Cap and trade can drive private investments. We should look for innovative ways to ensure mitigation without threatening our economies and the right to development. At let me be clear on this point. In the long run, market based solutions will prevail. They may be framed in different ways, but do have one feature in common: we must put a price on carbon.

Your fifth key message is “opportunity.” You point to the benefits and not just the burdens. I could not agree more. Low carbon societies must be our goal. I do not believe we have a choice in a world going to nine billion people by 2050. Energy is not just a commodity, but a liability to use. Energy efficiency is not a choice but an obligation. If we start deploying the technologies at our disposal we could get very far. If we encourage the development of more green technologies, we are almost there. The solution is at hand, if we disseminate these technologies globally, and adopt standards for equipment, fuel standards being right at the top. And turning to the current financial crisis, the world desperately needs good news about our economies. Business as usual is dead. Let us take the opportunity provided by the recession to redefine the future. Green growth is the answer to our climate problem as well as to our economic problems. Low carbon growth is a long term sustainable growth. And I fully agree with Lord Stern that high carbon growth kills itself in the long run. So let me put it this way: regardless of the discussion on climate change, a change of our energy production and energy consumption is necessary at any rate, because a low carbon economy is beneficial not only for the climate, but also for our energy security and for sustainable economic growth.

The sixth and final key message... [governance]. You point to the political, economic, and social constraints that prevent us from taking the right positions. A global agreement in Copenhagen is not just about tackling climate change. It will constitute a new era in multilateral relations. It will be a unique occasion to construct a global solution based on mutual responsibility to act and to assist. People demand

action; governments must realize that it is in their interest to act. Governments will fall if they fail. Politics must not be in the way of necessary solutions. The world needs better governance.

So in conclusion, let me repeat the key messages. Urgency – we must come to an agreement here in Copenhagen here in December. Direction – we must set a long-term target. Action – we must commit to short-term efforts. Fairness – the rich must assist the poor. Opportunity – green growth is the future. And governance – if we fail to act, we fall.

Thank you.

KR: I wonder now we've had the sort of scientific version of the key messages, and we've had the political version of the key messages, I wonder whether the scientific part of the panel would like to respond. Are there ways to build bridges from the scientific version, what science does and deals with it, to the political version of the same messages. We talk about communication, that's what we talked about on the first day, this is all about communication between different groups, and now we have the scientists and the politicians saying exactly the same thing – I think – at the podium. Why don't we try and get a scientific response. Stefan?

SR: I'm well aware that scientists and politicians and the general public often use language in a different way, there's a lot of communication problems sometimes arising from that, and I want to just express a concern that I have that when politicians talk about the ambition of two degrees as you did, that that's considered an ambition, and in the end, if all goes reasonably well, we actually end up with three degrees of warming. Whereas I think, I want to emphasize that when as scientists we talk about those two degrees, that really is a kind of upper limit that we really should not cross. I personally as a climate scientist, I could not honestly go and tell the public that two degrees warming is safe. We're already seeing a lot of impacts of the 0.7 degrees warming that we've had so far. So I consider two degrees not safe, and John Schellnhuber this morning asked about the question "Is Russian Roulette dangerous?" and in RR you have a one in six chance of something terrible happening, I think that when we go to two degrees we probably have more than a one in six chance of really bad impacts occurring.

KR: Dan did you want to respond?

DK: I do. I think one of the really key stories we heard in the prime ministers comments is this connection between opportunity and urgency and need is really one story. And so, if I could do the personal version of that for a second, it's that I was married in a small Nigerian village, and have returned fairly frequently to see what's going on in the area. And my aunt in Ondo [?] state in Nigeria tells me all the time that we're seeing crops change, and we're seeing the need for solar panels on rooftops. And there's not just a concern about climate, but there's a frustration that we're not seeing the full shift to this green economy, even where it really bears fruit. And so, some of the upcoming events that I think the scientific community needs to connect to make this full circle. Is that we have an event even in Copenhagen in May, and it's the world business summit on climate. And that's the sort of event where these scientific and political messages, brought in connection to the next and the current generation of innovative business leaders provides exactly what my aunt in a small village in Nigeria is asking for. She's asking for a series of opportunities and messages, to invest in clean tech, and she suspects that her village might not be the first place to invent it, but she's quite convinced that it's a place to put those into practice, and to discover the ability to put solar panels on rural hotels, not just to keep the beer cold in the fridge, but also to do a cold chain for antibiotics. And the opportunity to marry these other benefits – health, local development – is one where the business community that is not in huge presence here, except for some really neat green leaders, needs to diversify. And those examples are tremendously powerful. The more transitions we get, of companies, and of partnerships between political leaders, the scientific community,

civil society, really can change the equation. So it's not just about doing this to avert something, it's about creating that new green path. So that's what I hope we get out of this process.

KR: Lord Stern?

NS: I was going to pick up very strongly on the language that Dan Kammen used right at the end, and that's the power of the example. If we want to bridge the science and technology, the economics and the politics, showing how it can be done is so much more effective than simply describing how it can be done. So the more we can in the rich world show what low carbon electricity looks like, show how it can be done efficiently, develop low carbon transport, design cities and homes in a way that are much more efficient, those things will be used as examples. And I've often been challenged, particularly in developing countries, with the observation, which is entirely understandable, which is, "Look, we've seen the rich world's example in getting rich on high carbon growth. That we understand, that we can see. We have not yet seen low carbon growth, now those examples are starting to come, and we know that here in Denmark, there has been quite strong growth for quite a long period of time, there's very little increase in emissions. It can be broken, the link between growth and emissions. We know that. But the more powerful examples we get, that can be understood and taken forward in other parts of the world, and we will have to learn of course from examples that take place in China, India and elsewhere, there will be strong examples there too, but the more we get those examples demonstrated and shared, and we make it easy to do the sharing, the more I think traction we will get.

KR: You have to understand that I'm trying very hard to get Lord Stern to give me a crash course on economics on the side. Let me just see if I understand you correctly, Lord Stern. What you're saying is, instead of me feeling that I'm being a good citizen when I donate my old computer to some needy person in Africa and it gets sent, I pay to transport it down there, I probably would be better off investing in Dan's solar panels in Africa?

NS: Umm... a person of your abilities is perfectly capable of doing both of those things.

KR: We're very heavily taxed in Denmark! But what I'm trying to ask is, do we need to change our development, our whole thinking of development support

NS: We should be supporting development which is shaped and driven by developing countries themselves. This is about working together to expand the options that people have, the technologies that are available, and there will be important resource flows that are necessary. Some of those will come through carbon finance, some will come through overseas development assistance, some of them will come through private investment, some of them will come through the various kinds of guarantee and insurance instruments available through the international financial institutions. We should be looking all of us, those in developing countries, those elsewhere, at how we can find these ways forward in terms of investment, and how we can find the funding to support them. Then there would be a real partnership.

KR: Mr. Prime Minister?

PM: Yes, well, I need some concrete advice now. Stefan Rahmstorf said two degrees – the two-degree target – is not safe. So, now I need to know from the panel, can we as politicians still rely on the IPCC recommendations or not? What you're telling me is it that we should set the bar even higher? I need to know that. And I'll tell you why. I have – we have had a very hard battle within the European Union, and finally we decided on the 2°C target. It's been a real challenge to reach that point. And now you tell me "it's not enough." Now I need to know, and I need to know today, is it enough, or do we have to change this target, because it's fundamental. We have now nine months left before a very, very important

meeting in this room. It will be a real challenge – and now I think the scientific world has to make an agreement with itself – what is the real platform for politicians?

KR: And here you see a beautiful example of miscommunication. Because Stefan Rahmstorf did not say it wasn't safe, he said, "I can't say it is safe." And here, this is where we get into these nuances.

PM: Yes, but as a politician, I have to make a decision.

KR: I'm defending you. Will's going to try to rescue this one.

WS: I'm going to let Stefan have another crack at that first, then I'll have another go at it.

SR: Yes. I don't think the IPCC anywhere says that two degree warming is safe. So I don't think I disagree with IPCC on this point. What I was trying to say is the 2two degrees is really an upper limit, and its not something that, you know, we aim for two degrees but it's OK if we end up at three. That was my key message that I wanted to convey.

KR: Will, you want to finish up on that one?

WS: Just a couple of points. One is, when you try to come to some number like two degrees, that's a judgment that uses science, but it's not for scientists to give you that number. It's a risk game, and how much risk society wants to take. Now I think as John Schellnhuber said this morning, the 2 degrees is sort of an interesting compromise. And I think also from the political side of the fence, it's very difficult for you to deal with a shifting target coming from the scientific community. A final comment: I think that we have to look at this not only as a risk game, but also as an adaptive management game. I think as the science changes, simultaneously the economics will change, the technology will change in the ways that Dan and Lord Stern have outlined. So I think a two-degree target is a reasonable target for Copenhagen for 2009. I suspect five years down the track the game on both sides of the fence will change and we'll deal with that as it comes. But I think we've got to get the ship moving, and get moving in the right direction, so I think two degrees is quite reasonable for a first target.

KR: So Mr. Prime Minister, we'd be very happy if you'd just give us the two degrees, and we're not going to change it. Perhaps you would like to finish off on what you've learned?

PM: Yes, I thank you very much, because it's very complicated for me to operate in a room with moving targets. So thank you very much, that was my first question. Then, next question: on the basis of that, can I still work in the direction of 50% by 2050 taking into consideration that the developed countries should contribute with at least 80% reduction? Is it sufficient or not? Yes or no?

KR: Dan doesn't do "yes or no" very well.

SR: That is another question that I think cannot be answered with yes or no because of the uncertainty [KR: "It has to be."], so...

PM... I have to...

SR: There are good studies on this and they suggest that if you reduce 50% globally below 1990 by 2050, then you have something like a 50% chance of staying below those two degrees. So that's not a guarantee of staying below those two degrees. So I advise to take a more ambitious target if at all possible. Especially since that leaves us some room for maneuvering in case we find out things are worse. We need some safety margin. There is uncertainty in our science, and the uncertainty often works out in the

direction that things turn out to be somewhat worse. We have underestimated climate effects in the past, so the larger the safety margin that we can build into this, the better it is in my view.

KR: Dan?

DK: I think we have to take actually the stronger version of the statement to be honest. The IPCC has done its best job to synthesize the published literature, and not the fifty percent reduction, but the 80% reduction target, from the use of the current suite of models, indicates that if we can achieve this really historic – and I would compare achieving the 80% reduction from the 1990 levels really to an entire new industrial revolution – it's not a maybe we can shift, this is really a new thing to do. We have all these tools, but we need to do it. Eighty percent reduction, based on current best science, says that we are keeping a risk alive of between fifteen and thirty-five percent or so. That is an unacceptable number for any health insurance or auto insurance that any of us would purchase. So that 80% is like the two degrees. When Stefan said, I'm asking for two, but I'm not saying if we drift past it its OK. We're really saying this 80% is a critical version of "if you go above it, you are essentially saying, not only will we be in this really dramatically different regime, but also that we admit to ourselves that we have condemned the poor to suffer an even larger dose, because they will be the first to be affected, they will be the ones that we trivialize and avoid their suffering in this process, so we really are committing an extreme case of environmental and climate injustice if we don't go for this harder path.

KR. Mr. Prime Minister, I know you have a schedule to keep, I don't know if you'd like to round up, or whether we should continue this. I thought you wanted to close the session.

PM: Yes, because I think I have the necessary information now to conclude the agreement. Well, I like to challenge scientist because I know that they always operate within margins of insecurity, or risk, but the margins you provided me with is much smaller than what I'm used to in politics, so I'm not scared about it. But understand me correctly; at the end of the day, here in Copenhagen, we have – as politicians – to make the final decision, and to decide on exact figures, I hope. And this is a reason why I would give you the piece of advice, not to provide us with too many moving targets, because it is already a very, very complicated process. And I need your assistance to push this process in the right direction, and in that respect, I need fixed targets and certain figures, and not too many considerations on uncertainty and risk and things like that.

So all in all I would like to thank you very much for this discussion, which I think has been very fruitful and helpful, and I would like to congratulate you on having conducted a successful congress with an impressive participation of the world's finest scientists. And I think science should be the basis for decision-making in this field. Politicians can only act on what we know, and therefore your contribution is central. And you have given me the results from your hard work. I will carry your paper with me when I engage with other leaders to let them know what science says. You have delivered the facts; now it's up to others to carry it on.

And let me sketch out the process that will take us back to this venue in December. The formal UN negotiations will continue with a number of sessions throughout the year. But to close the deal on this multi-faceted issue, we need to engage heads of state and governments. And I see three important stepping-stones to achieve an agreement. First of all, we need to engage the key players at the very summit level. This group should meet in connection with the G8 Maddalena summit in Italy in July. Secondly, the UN high-level meeting in New York in September must give important final guidance for the content of the Copenhagen agreement. And thirdly, from September to December, we need intense negotiations in the UN track to sort out the modalities of an agreement. To exert the highest pressure on the negotiators, I encourage leaders to come to Copenhagen in December to help close the deal.

And what could then be the framework of the agreement?

As we all know, Climate change is a global challenge, it needs a global solution, and that is why we meet in Copenhagen in December. And I think an agreement should have three key elements: targets, funds and verification.

First of all targets. By 2050, global emissions must be down by 50% compared to 1990, and you know these numbers better than anyone, and I'm happy to learn that this is still our goal. I have noticed that you consider it the minimum, and we will take that into consideration.

We need a binding commitment from the industrialized world to cut emissions substantially below 1990 levels already by 2020, and by more than 80% in 2050. Developing countries should also reduce at least by 15 to 30% by 2020 compared to a business as usual scenario, and thereafter we need to see real reductions.

Secondly, we need an agreement on funding. The developing countries face a particular challenge. We must provide funds to the developing countries to help them to transform to low carbon economies. New technology will be crucial; forests and better land use must be part of the package. The funds should also help the developing countries adapt to climate change and facilitate dissemination of technology.

And then thirdly, verification. We need a reliable and transparent regime to measure, report and verify national and international actions, both in terms of mitigation and in regard to finance and technology. Transparency is also a precondition for effective market-based systems that can facilitate investment into the economies with the greatest reductions potential.

And then, after Copenhagen, where next? Because Copenhagen is not the end; it is the beginning of our path to 2050 and beyond. In Copenhagen we set the framework; we commit to take actions and to assist those that cannot provide for themselves. We commit to share technologies and to encourage their deployment. After Copenhagen, we must hold each other accountable. I call on the scientific community to follow the trends closely and help us adjust our course. We must not only focus on the obligations, but keep competing for the opportunities. The greener, the better. Denmark's goal is to be completely free of fossil fuels. I believe it is possible, with the help of science, and with the determination of government. I look forward to welcoming you in Copenhagen again. Thank you.

KR: I want to thank you all for coming here, and for all your hard work here in Copenhagen. I hope you've all enjoyed and learned from your time here in Copenhagen; we've certainly enjoyed and learned from having you here.

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## Widening Circles

2008 saw a turnaround over the assessment of climate change in the United States of America. After years of unreason, global warming was finally acknowledged by government and media. This is a promising turn, considering the accumulated facts. Historically, the USA has caused more greenhouse gas emissions than any other society. In the early years of the new millennium, the US emitted a third of the yearly global total of anthropogenic GHGs. At present, the average American leaves a per capita carbon footprint four times as big as that of the average Chinese, and nearly three times as big as that of the average European. And the USA manages this feat with 305 million people—that’s 4.5 percent of the current planetary population of 6800 million. However late, America’s cognitive turnaround is good news.

At the same time, the delay is bizarre. The recognition of anthropogenic climate forcing is not shared by many evangelical organizations, which wield considerable power in the US. Nor is it shared by leading politicians in the Republican Party. The US turnaround 2008 happened fifteen (15) years after the UN Framework Convention on Climate Change, and ten (10) years after the Kyoto Protocol opened for signature. This raises a question in the contexts of philosophical anthropology and geography of thought: why are Americans so stupid when it comes to climate? What is it about the American mind that retards cognitive processing of climate change data? (For the empirical analysis of this issue, see E. Maibach et al., *Global Warming’s Six Americas 2009: An Audience Segmentation Analysis*, Yale Project on Climate Change/George Mason University Center for Climate Change Communication, May 2009; 140 pp., [download](#))

Things get surreal if one considers that US science has made trailblazing contributions to the very information that has failed to impress US society for so very long. Particularly in the past thirty years, US scientists, time and again, have done pioneering research. Think of the work on rising atmospheric concentrations of CO<sub>2</sub> (J. [Hansen](#), *Science* 213 (1981): 957-966); or think of the so-called “hockey-stick” paper (M. [Mann](#), *Nature* 392 (1998): 779-787). But while the information caught on elsewhere and started to shape societies around the world, it failed to do so at home. A few years ago, I hoped to interest the US philosophy journal *Perspectives of Science* (MIT Press) in doing a topic issue on this question, but the editors, evidently stung, were dismissive. Others, meanwhile, such as Kevin Phillips (2007), have come to call this curious cognitive dismissal and its associated aspects “the American Disenlightenment”.

For our discipline, Philosophy, the cognitive delay points to the possibility that climate change challenges paradigmatic ways of doing philosophy. We were trained as students, and we train our students, in the critical dissection of data if we are analytically oriented, or the liberal deconstruction of knowledge if we have postmodern leanings. Either way, we groom skepticism. Suddenly doing so looks dubious. Oil company lobbyists, it seems, do much the same. Perhaps it would be more useful, for a change, to do the opposite—to train ourselves and our students in the critical synthesis of data, in the rational extrapolation from knowledge, and thus overall in the cultivation of an enlightened stance.

2009, to date, has seen a change of the scientific assessment of climate change. News made the University of Copenhagen conference '[Climate Change: Global Risks, Challenges & Decisions](#)' March 10-12. (Not the COP-15 Copenhagen Climate conference, but the preparatory science meeting at the same place right before that.) The upshot is that conservative predictions, which appeared to involve the safest assumptions, have been overtaken by climatological data in 2007 and 2008; and that dramatic predictions have emerged as being the most realistic. So the worst-case predictions of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change 2007, which used to be considered unlikely, are now seen as more likely. Emissions from 2007 to 2009 have outpaced expectations. The window of a 2 °C temperature rise has closed. Now a 3-4.5 °C rise is the best guess, with dire prospects for world agriculture. Nature reported in April 2009 that we are looking at a [one in three chance of a 6 °C rise or more](#).

Work in paleoclimatology hardens evidence for Lovelock's Gaia hypothesis—the notion that the Earth System is like a physiological system, with similar dynamic features, such as switchovers to a new steady state. Science reported in April 2009, in a study on the events 11,600 years ago, that “Earth's climate can change gear very quickly, either sharply warming or fiercely cooling”; and “Past shifts of this kind were massive, and some took place [within a few years](#).”

In May 2009, climatological findings about emerging trends in the Arctic underscore the scientific turnaround from the conservative to the dramatic. As a letter to Nature 28 May 2009 states, tundra permafrost stores twice as much carbon as is currently present in the atmosphere. Now the permafrost melts, and the ancient stock of carbon and methane is volatilizing. Plant growth in the tundra absorbs the emissions for a few decades but is then overwhelmed, “at rates that could make permafrost [a large biospheric carbon source](#) in a warmer world”. This is a positive feedback loop in the making. As we, especially the US and China—together accounting for nearly half of current emissions—release carbon, the arctic melts; as it melts, the tundra thaws; as it thaws, the permafrost carbon store opens; as it opens, climate forcing magnifies.

We are entering a historic age.

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Climate Philosophy Newsletter 3 (2009/2010) -- that's all folks! 😊