

The climate change game

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Accusations by sceptics have steered climate researchers into an unproductive battle. They should now rise above the debate and help develop models of the coupled climate–socioeconomic system to advise policymakers.

The dust of the ‘climategate’ media eruption is beginning to settle. Three recent investigations of the alleged scientific misconduct of the Climate Research Unit at the University of East Anglia — one by the UK House of Commons Science and Technology Committee^{1,2}, a second by the Scientific Assessment Panel of the Royal Society, chaired by Lord Oxburgh³, and the latest by the Independent Climate Change E-mails Review, chaired by Sir Muir Russell⁴ — have confirmed what climate scientists have never seriously doubted: established scientists, dependent on their credibility for their livelihood, have no motivation in purposely misleading the public and their colleagues. Moreover, they are unlikely to make false claims that other colleagues, working independently on similar data sets, can readily show to be incorrect. They are also understandably (but inadvisably) reluctant to share complex data sets with non-experts that they perceive as charlatans.

Scientists can, of course, err. They regularly argue with colleagues who arrive at different conclusions. These debates follow the normal procedure of scientific inquiry. The origin of the climategate extravaganza lies not in the dispute between scientists, but in the sometimes rather hapless response of climate scientists to criticisms from other, non-scientific segments of society that are guided by other motives.

It is important that climate scientists learn to counter the distracting strategies of interest groups whose goal is precisely to deflect from the real problems of climate change. I propose that thinking of — and simulating — the societal problem of climate change as a physical and socioeconomic system with many actors can raise the debate above the current battleground and support the urgently needed transition to a carbon-free economy.

The principal players

All actors engaged in the climate change debate have many goals that come in two classes: public goals that concern society as a whole, and individual, private goals. The goals are rooted in different values and perceptions,

or beliefs. A cursory glance at the interactions between the main players — climate scientists, the media and climate sceptics — immediately reveals the elementary feedbacks that produced the climategate spectacle.

The main societal motivation of climate scientists is to understand the dynamics of the climate system (both natural and human induced), and to communicate this understanding to the public and governments. Individually, most climate scientists have the goal of establishing a scientific reputation and, if possible, attaining more public funding for climate research. Their beliefs are centred on faith in the scientific method and the efficiency of the established peer-review process in separating verifiable scientific results from scientifically non-substantiated assertions. As normal citizens, they tend to support, through their specific insights as climate scientists, strong climate policies.

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The principal societal goal of the media is to support a functioning democracy by informing the public of important societal issues and exposing undesirable developments. The media judgement of what is important or undesirable for society depends on their belief structure, which can cover a wide range. In contrast, the individual motivation of the media is simply to remain in business by satisfying the public appetite for interesting stories.

The societal goals of climate scientists and the media are broadly compatible. However, there is clearly a fundamental incompatibility between those societal goals and the private media goal of producing interesting stories. Climate changes only slowly. Climate scientists have been warning of human-induced climate change with the same imperceptibly modified message for

forty years. The media goal of producing interesting news on climate change is clearly unattainable — unless relief is forthcoming from other actors.

Enter the climate sceptics (representing all interest groups, in particular the oil and coal industry, who fear negative impacts from climate policies). Their principal societal goal is to provide secure, affordable energy and other important products. Their individual interest is to minimize the negative impact of climate change policies on their own economic activities. The simplest strategy to achieve the latter is to reduce the public and political acceptance of the need for climate policies by sowing doubt on the integrity of climate change science. This is best accomplished by initiating a series of artificial controversies questioning the results of climate research and the motivations of climate scientists. These will then be gratefully taken up and amplified by the media.

Beyond the ivory tower

It is understandable that climate scientists feel harassed by this strategy, because by activating the media, the climate sceptics circumvent the established scientific peer-review process that normally protects them from wasting time on pseudo disputes. However, it is counterproductive for climate scientists to complain that interest groups fail to abide by the scientific etiquette.

Climate change, as scientists never fail to point out, is a global public concern. Thus climate scientists must learn to communicate with the world at large, which follows different rules. Climategate has clearly demonstrated, for example, that it is unwise to refuse requests for data and other information from climate sceptics on the grounds that they are non-experts whose sole intent is to construct false evidence in support of their own preconceived opinions. Apart from likely conflicts with national legislation for freedom of information, this immediately invites the suspicion that scientists have something to hide.

Similarly, it is counter-productive for individual scientists to emphasize the dangers

of climate change without pointing also to the many uncertainties. Climate policy should always be presented as an insurance against risks that can be only estimated. Even the reality of human-induced global warming, which is no longer scientifically disputed, should be presented as a statistical result⁵: the probability that most of the measured warming during the past 100 years was caused by human activities is so high (well above 90%), that politicians, whose job it is to make decisions in the face of uncertainty, should work on the premise that it is a fact.

Statements that lack the proper caveats are immediately exploited by climate sceptics. They portray climate scientists as alarmists who only further their own funding interests. However, the alarmist criticism can hardly be raised against climate scientists as a whole, or against the Intergovernmental Panel on Climate Change (IPCC). If anything, the IPCC has tended to be overcautious in its summaries⁶.

Following the award of the Nobel Peace Prize to the IPCC and in the early run-up to the Copenhagen conference in December 2009, climate science had been very much in the public favour. The tide turned just two weeks before the conference, when the hacked e-mails revealed that climate scientists are only human. The press interest was maintained for weeks by climate sceptics highlighting various minor errors in the latest IPCC Assessment Report⁷. Isolated errors in the extensive three-volume IPCC assessments are, of course, unavoidable. However, these can — and, in the future, undoubtedly will — be minimized by more stringent editorial procedures.

Untapped support

Climate scientists cannot take refuge from the sometimes unsavoury tactics of other players by fleeing into their ivory towers, but they can at least obtain moral support from other actors on the climate stage.

Many businesses, local administrations and civil society organizations view the task of transforming our present fossil-fuel-based economic system into a sustainable low-carbon system as a challenge of great promise. In the long run, the transformation process is seen as profiting not only the renewable energy sectors, but as leading to a higher quality of life for everybody.

Policymakers, despite the disappointing outcome of the Copenhagen climate conference, are also generally well informed and not readily susceptible to the discrediting strategies of climate sceptics. If policymakers fail to realize the aspirations of climate scientists and the green lobby, it is not so much owing to their exposure to disinformation as to the conflict between

their societal responsibility to balance the interests of present and future generations and their individual desire to become re-elected. They are thus strongly dependent on pressures from interest groups and, more importantly, on the interests and beliefs of the public (as they should be).

I suggest that the public, finally, has more common sense than scientists are inclined to think. It is not so easily misled. The motivations of the oil and coal industry in trying to sow distrust in the integrity of climate science are as transparent to the public as the failed attempts of the tobacco industry to question the proven dangers of smoking. The tendency of scientists to overemphasize the importance of their own area of research and argue for more funding is equally obvious. The public sensibly weighs this against the need of scientists to preserve their reputation by reporting honestly on their findings. Thus, although surveys have shown that the public at large has only a hazy understanding of the mechanism of global warming, it nevertheless widely accepts the conclusions of climate scientists regarding the human impact on climate change⁸.

Why, then, do policymakers still hesitate in implementing more effective climate policies? I suggest it is because they sense that the public response to future climate change is governed by the same truth-resistant mechanism that allows people to smoke despite their knowledge of the long-term health dangers. People (both the public and policymakers) tend to be carried by an undercurrent of faith that humanity will somehow muddle through, despite the pessimistic long-term forecasts of climate scientists. To generate support for climate policy, the continual repetition of the dangers of global warming may therefore be less effective than emphasizing that the transformation to a decarbonized economy is both feasible and affordable^{9–11} — and would, in the long term, enhance the quality of life for all.

Call to action

The details of the above sketch can clearly be debated. What is relevant is not whether it is 'correct', but that the climate change debate is framed in terms of the goals, perceptions and beliefs of the actors involved. Different viewpoints can then be removed from the present arena of advocates, in which each party argues only in support of its own preconceived picture, and brought into the established framework of constructive scientific debate, in which all parties strive for an improved common understanding¹².

Climate scientists have been successful in convincing the public and policymakers

of the need to combat climate warming, but have failed signally in providing effective advice on how to achieve this¹³. This is shown by the glaring discrepancy between the acceptance by the Copenhagen climate conference of the 2 °C global warming limit advocated by scientists and the net 4 °C global warming estimated to result from the mitigation goals actually proposed.

Scientists cannot, of course, resolve conflicts of interest. But they can contribute to their resolution by objectively investigating the goals and beliefs of individual actors and presenting these in simple models that everybody can readily understand. Since the unforeseen onset of the global financial crisis, the limitations of the mainstream models that have been used by economists to assess the impacts of climate change policies have been widely recognized^{13–16}. The precrisis view of the market economy as a basically stable system is being replaced by more realistic dynamic models, in which the evolution of the economy is determined by the strategies of many competing actors pursuing conflicting goals.

These new economic models incorporate the key processes — multi-actor strategies, potential instabilities and government policies — that are needed as building blocks for modelling a controlled transition from a fossil-fuel-based to a decarbonized global economy. A stronger participation of climate scientists with experience in dynamical systems would provide a welcome boost to these efforts. □

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References

1. <http://go.nature.com/1HILe9>
2. <http://go.nature.com/mXREcW>
3. <http://go.nature.com/s1HtD8>
4. www.cce-review.org/news.php
5. IPCC *Climate Change 2007: The Physical Science Basis* (eds Solomon, S. et al.) (Cambridge Univ. Press, 2007).
6. Houghton, J. We Climate Scientists Are Not Ecofanatics. *Times Online* (15 March 2010).
7. IPCC *Climate Change 2007: Impacts, Adaptation and Vulnerability* (eds Parry, M. et al.) (Cambridge Univ. Press, 2008).
8. <http://go.nature.com/ArgW19>
9. Azur, C. & Schneider, H. S. *Ecol. Econ.* **42**, 73 (2002).
10. Weber, M., Barth, V. & Hasselmann, K. *Ecol. Econ.* **54**, 306–327 (2005).
11. Stern, N. *The Economics of Climate Change: The Stern Review* (Cambridge Univ. Press, 2007).
12. Pielke, R. A. Jr *The Honest Broker* (Cambridge Univ. Press, 2007).
13. Hasselmann, K. & Barker, T. *Climatic Change* **89**, 213–229 (2008).
14. Farmer, J. D. & Foley, D. *Nature* **460**, 685–686 (2009).
15. Akerlof, G. A. & Shiller, R. J. *Animal Spirits* (Princeton Univ. Press, 2009).
16. Beinhocker, E. *The Origin of Wealth* (Harvard Business School Press, 2006).