

Chapter 30

Educating and motivating global society

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Note: This chapter is a commentary on chapter 29.

'Information flow: the basis for sustainable participation' is the title of John Sulston's chapter in this book. It is probably what the creators of the Aarhus Convention had in mind when they drafted the document in 1998. This UN convention, whose formal title is 'Convention on Access to Information, Public Participation in Decision-making, and Access to Environmental Justice in Environmental Matters', is founded on the belief that citizen involvement can strengthen democracy and environmental protection (POST, 2006). Then-Secretary-General Kofi Annan went as far to describe it as 'the most ambitious venture in the area of environmental democracy so far undertaken under the auspices of the United Nations' (UNECE, 1998). On ratification of this document, more than forty states acknowledged that access to information is an essential prerequisite for public participation in environmental decision-making processes, and that sustainable development can only be achieved through the involvement of all stakeholders.

Each of us makes numerous decisions related to climate change every day. Whether as individuals, consumers or voters, our behaviour will ultimately influence the paths of greenhouse gas (GHG) emissions. As with any interconnected global problem, a fair understanding of the intricacies is required to make the right (i.e., intended) choices. This understanding is not always easily attained, especially with the complex challenge of climate change. While the UNFCCC website provides, for example, free access to the most recent data on national greenhouse gas emissions and removals, it is still a challenge for the lay person to understand the complex relationship between the emission reductions agreed under the Kyoto Protocol, and why the use of energy-saving light bulbs does not contribute to a reduction in these emissions.¹

Obviously, the goal is not to turn everyone into a climate expert. Some people might even argue that understanding a problem does not necessarily mean acting on it (Chess and Johnson, 2007). However, the measures required to avoid dangerous climate change (Schellnhuber *et al.*, 2006) will affect everyone, whether through voluntary changes in lifestyle at a personal level, or through policies imposed by

¹ In the initial phases of the European Emission Trading System (ETS), which was set up according to the specifications agreed under the Kyoto Protocol, each EU member state receives a set amount of emission allowances. In total, the amount of allowances adds up to an agreed cap in greenhouse gas emissions. National Allocation Plans (NAPs) regulate the distribution of these allowances between the different energy-intensive industries of a country, such as electricity generators, oil refineries, and manufacturing plants. Each industrial installation may either use up its allowances through emitting the permitted amount of greenhouse gases or may sell the allowances on the market ('cap and trade'). When households save energy through the use of energy-efficient bulbs, less electricity is used and thus, initially, less CO₂ is emitted. However, the electricity provider can now sell its surplus allowances to enable other industries to emit more GHGs. In other words, energy-saving measures under the cap-and-trade system do not save any CO₂ emissions. They do, however, contribute to the development and spread of energy-efficient technologies and applications. These will become important during the later stages of the ETS, when industries will have to pay for their emission allowances and will pass the costs for this on to the customer, which will make – in our example – the use of energy-efficient light bulbs financially rewarding.

governments. To facilitate these changes, we need to ensure that individuals, consumers and voters understand the issues at stake. It is therefore not enough to merely provide the necessary information. We also need to ensure that people understand the implications of this information; i.e., that people understand, accept, and facilitate concrete action on all levels, from the personal to the national and global. After all, the motivation to act will most likely result from individuals feeling part of both the problem and the solution.

Who is the appropriate messenger for this information? Which people are credible, unbiased, knowledgeable, and dedicated enough to communicate the required changes? Clearly, scientists should be an essential part of this group of messengers. It may have been for this reason that the Nobel peace laureate Al Gore, in his speech to the annual meeting of the American Association for the Advancement of Science (AAAS) in 2009, told the assembled scientists, ‘Keep your day job, but start getting involved in this historic debate. We need you.’ (AAAS, 2009).

When faced with the choice of where to become active, there is certainly a broad range of options for the dedicated scientist. The political arena is clearly an important field where the advice of scientists is greatly needed and, thankfully, frequently sought. However, the practice of advising politicians and government officials can prove challenging as they often demand a single and simple answer rather than accepting that, due to the uncertainties intrinsic to science, a range of outcomes or solutions is possible. Concerned about their credibility, in particular amongst their peers, many scientists may thus shy away from this challenge (Cole and Watrous, 2007). Policy advice on the other hand, where a range of options is presented and discussed in order to support the legislative process, may seem a more attractive avenue of support. Many advisory bodies and national scientific societies (such as the Royal Society of London or the AAAS) have taken on the task of supporting policy development in key areas. Their tools are reports, policy briefs, and statements or letters of concern, although some doubt the impact of the latter (Meyer, 2007). However, policy advice also demands participation in formal, sometimes slow and rather institutionalized, processes that leave little room for personal engagement. The most renowned example of a scientific body providing advice to policymakers is the IPCC, which publishes its main reports every six to seven years after a lengthy process of scrutinizing discussion.

To speed up changes, scientists could (and should) also communicate to the public in a more direct manner. Here, an often used – albeit slightly problematic – communication channel has been the mass media. While newspapers, magazines, radio, television, and the Internet reach a broad audience, the results have not always been satisfying. One cause lies in the traditional model of news reporting, where a balanced approach is used to present more than one side of an argument with the aim of giving the audience the opportunity to form its own opinion. However,

scientific agreement on anthropogenic climate change has now reached a level where the balanced approach no longer serves its previously well-intentioned purpose. Today, the scientific consensus on climate change should receive the relative weight it deserves, particularly in the face of dissenting claims from a number of reasonably well-known climate sceptics with sometimes dubious scientific backgrounds. The declining 'news value' of climate change also adds to the problem, as opinions that counter the general trend are favoured over 'more-of-the-same' prognoses (for example, that sea levels are rising some millimetres faster than anticipated). Due to the salience and selling points of such 'controversial articles', these reports distort the insights of science and impair the dissemination of knowledge to the public sphere. One way to counter this is for scientists to better support journalists in understanding their area of expertise, for example through workshops that explain the latest research findings in their specific discipline. In addition, scientists should be more helpful in providing clear analyses and statements, or perhaps even personal perspectives which are so important for news reporting (Ward, 2008).

Education, as another communication channel, may offer the opportunity for a more direct and possibly more rewarding experience of knowledge transfer. Teaching in schools and universities facilitates the dissemination of knowledge and understanding through the student's personal network of family and friends (Pratt and Rabkin, 2007). However, at present climate change is not represented as a specific topic in the curricula of most schools and it is only due to the personal effort of committed science teachers that it is covered at all. But for students to understand the climate crisis from many different perspectives, from physics and biology to economics and social studies, it is important to integrate it into the official curricula. Another very important aspect is science education itself, as students need a better understanding of scientific methodology and probabilities in order to judge uncertainties. By stimulating scientific discussions in class, teachers enhance the understanding that discussion of an issue does not imply that there is doubt of its existence *per se*.

Finally, a whole range of other opportunities exists for scientists to directly interact with the public. Books, blogs, public talks and public conferences, open days or contributions to documentaries and museum exhibitions are just a few possibilities for disseminating knowledge in a direct, undiluted and unbiased manner. A major challenge here is to adapt well to the different types of audiences, and to not underestimate the power of the narrative. Numerous studies have shown that certain forms of communication can make information more memorable. Suggestions range, for example, from using scenarios and analogies to evoke relevant personal experiences (Marx *et al.*, 2007), to visualizing the consequences of inappropriate actions with respect to greenhouse gas emissions (Stoll-Kleemann *et al.*, 2001).

There are clearly many challenges for scientists in appropriately communicating their knowledge. However, their main task must certainly remain the generation of knowledge in the first place. It may, in fact, be too much to demand that they should also know when, where, how, and to whom it can best be communicated. It thus strikes me that scientists would greatly profit from mediator organizations that facilitate the adequate transfer of scientific knowledge to politicians, media and the public. Of course, many NGOs already cooperate with scientists and, regarding certain issues, have largely taken over the role of informing and educating the public. Environmental NGOs, however, mostly attract those who already favour their position. One could argue that this is merely a case of preaching to the converted. Therefore, what I have in mind is something like the Union of Concerned Scientists (UCS),² a US non-profit science advocacy organization that is supported by numerous professional scientists and many private citizens. While this organization focuses on other environmental issues as well as climate change, its science-based activities that aim for responsible changes in government policy, corporate practices, and consumer choices seem to have the right mix to communicate scientific knowledge in an efficient and credible manner.

The most important point, however, is that a mediator organization does not have any agenda other than broad outreach and communication of sound scientific findings. The advantages of such an organization for Europe with the focus on climate change and sustainability questions are clear: scientists can concentrate on their scientific projects, while the mediator organization is responsible for communicating their findings effectively. The tasks of such an organization would include, for example, identifying the windows of opportunity to introduce one's results in policy-relevant decision-making processes, functioning as a contact point for journalists to select the right individuals for certain news stories, or even bringing scientists and artists together to help create a vision of a carbon-free future. In addition, it could help identify the target audience in public talks, and support scientists in tailoring their messages adequately without interfering in any way with the contents. Combining the knowledge of scientists with the invaluable skills of trained, respectable and committed communicators would help to increase both social pressure and political action.

As outlined by many of the authors of this book, the challenges before us are demanding, and may even appear daunting. We therefore need support from as many individuals as possible to facilitate the required societal changes. Due to their knowledge, scientists bear a particular responsibility in this context. They will need to improve their communication of the problems and solutions in order to support the public in dealing with climate change in an educated way. Whether

² www.uscusa.org

through closer cooperation with interested journalists or through more direct engagement with the public, the possibilities for action are ample. Of course, as Sir Crispin Tickell pointed out in an editorial in *Science* in 2002, ‘Making unwelcome changes now to avoid possible consequences in an uncertain future is a difficult proposition to sell to anyone’ (Tickell, 2002). But I am convinced that – with adequate support – scientists can contribute greatly to our current debate and convey precisely this message!

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