

Communicating about climate change: Linguistic analysis of climate texts

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Summary

That climate change is happening and that it is human-induced are well-established facts in the international scientific community. Research-based knowledge about why and how the climate changes emanates from various natural science disciplines. What happens when this knowledge is disseminated and communicated about in other contexts, involving economists, politicians, NGOs, the media and people in general? The implications of climate change are not linked to climatic conditions alone; they also have a social and human dimension. How do narratives focusing on these dimensions portray the various actors and voices involved? In this short paper I briefly present recently initiated research related to these two questions. The studies reported on take their point of departure in linguistic analyses of various textual representations of climate change issues.

1 Introduction

Climate change is a long-term phenomenon which is global in nature, but experienced locally. Another term for the same phenomenon, *global warming*, may seem less relevant to us in Northern Europe when we experience several consecutive winters with long spells of cold weather and more snow than usual. Even when we know that weather is not the same as climate and that the temperature trend over time is clearly upwards even in our part of the world, we may find it difficult to see the need to act on the climate scientists' claims that this development is human-induced through increased levels of CO₂ emissions. The interplay of numerous factors in the extremely complex climate system(s) and the social and human consequences contribute to making discussions about climate change even more complex. Climate change has repercussions for aspects of human and social development such as economic growth, poverty, food production and the availability of water. The participation of a large number of actors complicates matters even further. Not only climate scientists, but economists, politicians, representatives of non-government organisations (NGOs), new and traditional media, as well as people in general take part in the discussions (see e.g. Weingart, Engels & Pansegrau 2000).

In this short contribution, I will briefly outline two new research initiatives, both interdisciplinary, where I cooperate with other researchers on the study of climate-related texts. Both initiatives are in the initial stages, so the work undertaken so far represents exploratory studies only. The first project, which is funded by the Research Council of Norway and operated through the development research institution CMI, is called *Climate Change Discourse, Rights and the Poor*.¹ This is an international project which focuses on how narratives about climate change affect approaches and responses to the poor and their rights, particularly with regard to social rights related to resources affected by climate change impacts, for instance water and food. The second project, also interdisciplinary, involves researchers from the University of Bergen (UiB), NHH, Oslo University College and Uni

¹ www.cmi.no/research/project/?1427=climate-change-discourse-rights-and-the-poor.

Research. We intend to study the reflection of voices that represent different viewpoints in the climate debate and how knowledge and opinions are developed. In a broad sense, the main aim of both projects is to study the interaction between climate knowledge, those who must act on this knowledge and the individual citizens. Thus science, politics and society at large are involved. In both projects I cooperate with Professor Kjersti Fløttum (UiB) on linguistic analyses of different kinds of climate-related texts.

2 Climate change in a development perspective

In the context of this project we are currently carrying out an explorative study of two development reports from the U.N. system dealing with the climate issue. One is the United Nations Development Programme's (UNDP) *Human Development Report 2007/2008* and the other is the World Bank's *World Development Report 2010*. For both reports, the point of departure is the recognition that those who have contributed least to climate change are the ones who are most vulnerable to the consequences. Both reports also stress the urgent need for action. We are focusing on the initial overview section of the two reports with a view to study how the phenomenon of climate change is portrayed and what the role of the poor in a climate context is considered to be. Our overall hypothesis is that the different contextual settings of the texts will have an impact on these two phenomena. Our study is undertaken through analyses of linguistic features that are related to rhetorical strategies and argumentation. What our preliminary analyses show is that even from a shared point of departure, the two reports to some extent tell different 'stories'. While the World Bank report seems to portray the phenomenon of climate change and the handling of it as "routine response" to a "routine challenge" (Gasper 2010: 11), the UNDP report sees climate change as a battle, a battle which is part of the broader fight for humanity; climate change threatens human freedom. We see argumentative and linguistic traces of the two approaches. To give just a couple of very simple examples from the micro-linguistic level:² While the verb *act* occurs 17 times in the World Bank text, the UNDP uses it only three times; *can* is used 53 times in the World Bank text and 23 times in the UNDP; the lexemes *fail/failure* occur 15 times in the UNDP text but only twice in the World Bank text; the collocation *dangerous climate change* occurs 22 times in the UNDP and only twice in the World Bank text.

3 The communication of climate issues across discourse communities

Within the framework of this project, Kjersti Fløttum and I have started to consider factors that come into play when scientific claims move out of their original setting and appear in a variety of contexts. We have also undertaken an exploratory analysis of a text produced by the Intergovernmental Panel on Climate Change (IPCC). The IPCC is considered as a key provider of international consensus-based climate knowledge. More specifically, the text belongs to the IPCC's Fourth Assessment Report, from 2007. It is called Summary for Policymakers and is a part of the overall report's Synthesis part. As such, it represents a condensation of current knowledge in a form intended for policymakers. Our text is thus produced for a non-scientific audience. To communicate research-based information to audiences without the same academic background is often a challenge, a challenge that most of us experience when we try to explain our work to people outside our own field. When it comes to the climate issue, an additional complicating factor is the nature of the knowledge involved. Climate science is characterised by an extremely complex interplay of factors, a global perspective and a time-line that runs across many centuries. This implies that uncertainty becomes an aspect which must be communicated. However, expert understanding

² The two texts are roughly equivalent in length.

of uncertainty is different from that of non-experts (see e.g. Zehr 2009). Many climate sceptics see this uncertainty as support for a ‘wait-and-see’ attitude; we don’t know enough to act.

The communication of the climate issue to groups outside the science environment is much focused on by the climate scientists themselves, something which is reflected in the following quote from *Science*, one of the world’s most prestigious journals:

it is imperative that we improve the exchange of information between scientists and public stakeholders [...] we urge the broader science, communication, and funding community to support large-scale projects to translate scientific assessments into simpler, more useful terms (Bowman et al. 2009: 36)

The IPCC has established explicit guidelines for communication with non-scientific audiences. Glossaries to their various documents are provided, and the levels of certainty and agreement among the scientists in relation to specific claims are presented in the shape of meticulously defined scales of quantitatively and qualitatively based expressions. One scale, for instance, ranges the likelihood of presented claims through eight levels, from *virtually certain* (>99%) to *exceptionally unlikely* (<1%). The question then becomes whether readers without a science background are able to grasp the implications of this mode of presentation. Risk communication studies indicate that this is not the case (see e.g. Patt & Schrag 2003; Leiss 2004).

The IPCC reports aim to be policy relevant but policy neutral. Our analysis of the Summary for Policymakers text shows this to be the case. In a few examples, the implications of non-action are spelled out, giving the statements a flavor of urgency. However, no specific policy is indicated:

Delayed emission reductions significantly constrain the opportunities to achieve lower stabilisation levels and increase the risk of more severe climate change impacts. (2007: 18; emphasis added)

This contrasts sharply with statements in texts which do not purport to be policy neutral, for example Al Gore’s Nobel Lecture in 2007. In the following extract, a specific policy is suggested and argued for to reduce emission of CO₂:

And most important of all, **we need to put a price on carbon** — with a CO₂ tax that is then rebated back to the people, progressively, according to the laws of each nation in ways that shift the burden of taxation from employment to pollution. **This is by far the most effective and simplest way to accelerate solutions to this crisis.** (emphasis added)

In text linguistics, the study of communication between experts and non-experts has typically taken place under the heading of popularisation (e.g. Adams-Smith 1987; Hyland 2010; see also Hilgartner 1990). However, few linguistics-based studies have so far focused on climate change. In communication studies, the movement called Public Understanding of Science has dealt with many of the same textual features. Within this movement, the so-called deficit model was for a long time the dominant one in conceptions and discussions of the communication of knowledge. This model assumes (degrees of) scientific illiteracy and knowledge asymmetry: the scientists have the knowledge, while the public are (more or less) ignorant. There is a one-way flow of information from scientists to the general public (Burns, O’Connor & Stocklmayer 2003). A later model is the contextual approach, a more complex model that instead focuses on the interaction between science and the public (Burns et al. 2003). In this model, public understanding arises from a rhetoric of reconstruction, and cognitive aspects are complemented by ethical and political concerns (Gross 1994). The contextual model is the basis for much communication research today. In the Public Understanding of Science model three aspects of ‘understanding’ are seen as crucial: understanding of the content, understanding of the methods, and understanding of science as a

social enterprise, that is, an awareness of the impact of science on individuals and society (Burns et al. 2003: 187).

As already stated, both text linguistic and communication-based studies have often focused on the same features, such as the presentation of terminology (*ocean pollutants called chlorofluorocarbons*),³ the spelling out of implications (*Carbon dioxide dissolves easily in seawater, so the oceans act as gigantic carbon sinks*), examples linking scientific facts and processes to everyday experiences (*In 2008 the oceans sucked up 2.3 billion tons of carbon – about six years’ worth of U.S. gasoline consumption*), and the use of metaphors (*Ocean losing its appetite for carbon*). In addition, studies from both approaches have shown that phenomena are conceptualised differently in different contexts. To scientists, climate change is a change in a system, while the general public conceptualise it as a phenomenon that impacts on their existence. The effects for them are therefore typically presented in the form of a narrative representing a human drama (Trumbo & Shanahan 2000; see also Fahnestock 1986; Adams-Smith 1987; Ungar 2000). In the book *Merchants of Doubt* by the American science historians Naomi Oreskes and Erik Conway, they refer to this phenomenon when they state that “[a] scientific discovery is not an event; it’s a process” (2010:16).

In our on-going research on the communication of climate issues we intend to look more closely at such features in different text genres, e.g. economic policy documents, newspaper articles and adapted documents produced by institutions such as the Bjerknes Centre for Climate Research. In addition, the handling of complexity and uncertainty, which are such characteristic features of the climate phenomenon, will be given special attention. Yet another aspect that we will focus on in our studies is trust-building. How is trust created in texts? Which actors are presented as credible? Which claims have most scientific and political weight? It is well-established that the IPCC carries out a very thorough review procedure of the current state of climate science, and the institution has long enjoyed a privileged status. Still, we know that their reputation, too, has been questioned recently:

After months of soul-searching, the Intergovernmental Panel on Climate Change (IPCC) has agreed on reforms intended to restore confidence in its integrity and its assessments of climate science. Created as a United Nations body in 1988 to analyse the latest knowledge about Earth’s changing climate, it has worked with thousands of scientists and shared the Nobel Peace Prize in 2007. But its reputation crumbled when its leadership failed to respond effectively to mistakes — including a notorious error about the rate of Himalayan glacier melting — that had slipped into its most recent assessment report [...] (Schiermeier 2011: 261)

And what about the climate sceptics? In contrast to the IPCC and science-based magazines like *National Geographic*, they typically do not have many concrete peer-reviewed climate science studies to back their claims, as the following quote from an essay (n.d.) called “Global Warming Is Not a Crisis” by Joseph L. Bast, President of the website The Heartland Institute, indicates:

A recent review of 1,117 abstracts of scientific journal articles on “global climate change” found only 13 (1 percent) explicitly endorse the “consensus view” while 34 reject or cast doubt on the view that human activity has been the main driver of warming over the past 50 years.

No actual scientists or studies are named. How do the Heartland Institute members create confidence in their arguments? Do references to high and specific numbers (1,117 abstracts, 1 percent) and to “scientific journal articles” make the information ‘scientific’ enough and the claims by implication credible to non-expert readers?

³ The examples in this paragraph are from an article by C. Dell’Amore in *National Geographic News* (2009).

4 Concluding remarks

Climate change is a special phenomenon in a number of ways, and the fact that it is linked so closely with many other global challenges today makes it even more special. The ongoing conflicts and current revolutionary movements in many Middle Eastern countries, for instance, are of course political conflicts, but poverty, equality, economic development and lack of food are important ingredients, and climate change is likely to interact with all these issues. Through linguistic studies of textual representations of these issues we hope to bring out new facets of climate communication across discourse communities.

References

- Adams-Smith, D. E. (1987) The process of popularization – rewriting medical research papers for the layman. *Journal of the Royal Society of Medicine* 80. 634-636.
- Bast, Joseph L. (n.d.) *Global Warming Is Not a Crisis*. The Heartland Institute. URL <http://www.globalwarmingheartland.org/about.html> <27.07.2011>
- Bowman, Thomas E. /Maibach, Edward /Mann, Michael E. / Moser, Susanne C. /Somerville, Richard C. J. (2009) Creating a Common Climate Language. *Science* 3. 36-37.
- Burns, T. W. /O'Connor, D. J. /Stocklmayer, S. M. (2003) Science communication: A contemporary definition. *Public Understanding of Science* 12. 183-202.
- Dell'Amore, Christine (2009) Ocean Losing Its Appetite for Carbon. *National Geographic News*, 18 November. URL <http://news.nationalgeographic.com/news/2009/11/091118-oceans-carbon-sink-global-warming.html> <27.07.2011>
- Fahnestock, Jeanne (1986) Accommodating science: The rhetorical life of scientific facts. *Written Communication* 3 (3). 275- 296.
- Gasper, Des (2010) Influencing the climate. Explorations in interpretive and value-critical policy analysis. Inaugural lecture, 16 December. International Institute of Social Studies, Erasmus University Rotterdam. URL <http://www.iss.nl/News/Influencing-the-Climate-inaugural-lecture> <27.07.2011>
- Gore, Al (2007) Nobel Lecture. Oslo, 10 December. URL http://nobelprize.org/nobel_prizes/peace/laureates/2007/gore-lecture_en.html <27.07.2011>
- Gross, Alan G. (1994) The roles of rhetoric in the public understanding of science. *Public Understanding of Science* 3. 3-23.
- Hilgartner, Stephen (1990) The dominant view of popularization: conceptual problems, political uses. *Social Studies of Science* 20 (3). 519-539.
- Hyland, Ken (2010) Constructing proximity: Relating to readers in popular and professional science. *Journal of English for Academic Purposes* 9. 116-127.
- IPCC (2007) *Fourth Assessment Report: Climate Change 2007. Synthesis Report, Summary for Policymakers*. URL http://www.ipcc.ch/publications_and_data/ar4/syr/en/spm.html <27.07.2011>
- Leiss, William (2004) Effective risk communication practice. *Toxicology Letters* 149. 399-404.
- Oreskes, Naomi /Conway, Erik M. (2010) *Merchants of doubt: How a handful of scientists obscured the truth on issues from tobacco smoke to global warming*. New York: Bloomsbury Press.
- Patt, Anthony G. /Schrag, Daniel P. (2003) Using specific language to describe risk and probability. *Climatic Change* 61. 17-30.
- Schiermeier, Quirin (2011) Major reform for climate body. *Nature* 473. 261.
- Trumbo, Craig W. /Shanahan, James (2000) Social research on climate change: where we have been, where we are, and where we might go. *Public Understanding of Science* 9. 199-204.
- UNDP (2007/8) *Human Development Report (2007/8). Fighting Climate Change: Human Solidarity in a Divided World*. URL http://hdr.undp.org/en/media/HDR_20072008_Summary_English.pdf <27.07.2011>
- Ungar, Sheldon (2000) Knowledge, ignorance and the popular culture: climate change versus the ozone hole. *Public Understanding of Science* 9. 297-312.
- Weingart, Peter /Engels, Anita /Pansegrau, Petra (2000) Risks of communication: Discourses on climate change in science, politics, and the mass media. *Public Understanding of Science* 9. 261-283.

World Bank (2010) World Development Report (2010). Changing the Climate for Development.

URL <http://siteresources.worldbank.org/INTWDR2010/Resources/5287678-1226014527953/Overview.pdf>
<27.07.2011>

Zehr, Stephen C. (2000) Public representations of scientific uncertainty about global climate change. *Public Understanding of Science* 9. 85-103.