

## CHAPTER

### Localizing Climate Change: A Multi-Sited Approach

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Climate change is real – this lowest common denominator of climate science and politics has caught on more and more. But how to keep it real? What kind of phenomenon is climate change, how to localize it and how to study it ethnographically? Wherever the anthropologist goes, climate change is already there. So too in my case when I set out seven years ago to study conflicts about national park on the German North Sea coast and ended up studying climate change. Climate change has been my subject ever since, which I have pursued in various projects and co-operations in diverse academic settings. In doing so, my multi-sited approach entered the realm of science studies and, more specifically, of actor-network-theory. In this article I will present some examples from my fieldwork in order to demonstrate the deployment of my multi-sited approach and the contributions it can make to the current climate change discussion.

Both nature and climate are ‘universals’, and ‘global connections are everywhere’ (Tsing 2005, 1). But universals are particulars, too, and one of climate’s particularities is that ‘global climate is a model’, as Tsing (ibid, 101) also notes. Whether we talk about the possible effects of climate change for low lying coasts, for the fuel-based economy or the future of planet earth, we always rely implicitly on scientific models and symbols such as the famous hockey stick curve, which shows so impressively the parallel rise of emissions and temperature since the industrial age. But what does this mean for a specific region such as the North Sea coast? How to localize climate change?

Localizing is an arbitrary process, as Candea (2007) convincingly demonstrates, with multi-sited ethnography torn between the ‘big picture’ and the boundaries of a restricted field-site. From the perspective of climate science, localizing has a specific meaning. It is the result of downscaling from global climate models with the help of proxy data and long time measurements of temperature, storm frequencies and so on in specific places. Thus, localizing is a calculation; it is the result of another model. But how ‘real’ is this kind of localizing, and how does it relate to other realities that make up the coast?

In my article I will show that identifying climate change and localizing it through scientific expertise is an activity that is much more complex than ‘only’ calculating. A close examination of scientific practice makes clear that localizing is as much a problem for climate researchers as it is for ethnographers. This is not only true for the interconnectedness of the global and the local climate, but also for the separation of climate change as a ‘scientific fact’ on the one hand, and as a ‘matter of concern’ on the other. Quite to the contrary, following climate research offers an insight into a messy world full of ramifications, surprising activities and unexpected ‘social’ content.

Actor-network-theory as defined by Latour can be read as a radical form of the multi-sited approach. It does not only open up science as a field for ethnographic research, but it empowers the ‘informant’ as an actor in an encompassing sense. According to Latour, actors have their own theories about what they do; they are not mere informants who have to be taught about ‘the context in “in which” they are situated and “of which” they only see a tiny part, while the social scientist, floating above, sees the “whole thing”’ (Latour 2005, 32); actors also have ‘their own theories of actions’, they are ‘full-blown reflexive and skillfull metaphysicians’, and they have to be taken seriously as intermediaries (ibid, 57).

Following climate researchers opens up a black box and offers an insight into the social construction of climate change. Far from producing ‘only’ models or calculations,

climate science is already loaded with ‘social’ content. Thus, the task is not to add something to the climate models in order to keep them more real, but to follow the scientific construction of climate change. In doing so, it becomes obvious that climate science does not produce authoritative ‘facts’ which society has to follow; instead, science itself is a social activity and articulates propositions. According to Latour (2004, 247), climate as a proposition is ‘...an association of humans and nonhumans before it becomes a full-fledged member of the collective, an instituted essence’. As a well-crafted and well-articulated argument, climate change turns into a ‘thing’ that assembles, connects, and finally finds its way into democracy. Multi-sited ethnography of climate change means for the purpose of this article to follow climate scientists and to enter the network where climate change is simultaneously constructed as a universal and localized as a particular. It is not necessary to add complexity or social context to the activities and findings of climate researchers; multi-sited ethnography is intended to show the complex web of ‘humans and nonhumans’ that connects the North Sea coast with the frightening climate curve. Actor-network-theory thus offers a methodology that is itself ‘a narrative or a description or a proposition where all the actors *do something* and don’t just sit there’ (Latour 2005, 128).

### **Research design**

My research had its beginning in an interdisciplinary project on the conflict over a national park on the German North Sea coast that focused on the concept of nature.<sup>1</sup> The transition from nature to climate arose from collaboration with a participating Institute for Coastal Research, which also conducts climate research. The particular interest of the Institute was the multi-dimensionality of coast and nature as this was addressed by our project. That is unaccustomed terrain for hardboiled scientists. But as it turned out, even if they are

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<sup>1</sup> ‘Nature in Conflict: Nature Conservation, Nature Conceptions and Coastal Images’ (2001-2004, funded by Volkswagen foundation).

positivists, they cannot all be tarred with the same brush. Positivists are capable of reflection, just as reflective cultural anthropologists can turn into part-time coastal researchers. Out of a sporadic cooperation, the director of the Institute and I developed what Marcus (1998, 116f) calls ‘complicity’. The director opened his institute for ethnographic research, and I offered my ethnographic expertise. The Institute became my part-time employer and commissioned me to conduct a media analysis of the Elbe River flooding in August 2002 (Krauss and Rulfs 2003), and later on I concluded a project called ‘Anthropology of the coast as a knowledge landscape’ (Krauss 2007), reflecting the social construction of the coast and the role that coastal research plays in this process.

For the time of these projects, I pitched my tent amidst this island of rigorous science. This gave me ample space to practice participant observation. The semi-official terminology was that I would be studying the ‘tribe of scientists’ and their ‘cultural backpack’. Both sides got along well with this formulation, which Latour and Woolgar (1979) also use in the introduction to their *Laboratory Studies*. These metaphors from the myth of cultural anthropology formed the discursive foundation for our collaboration and easily opened doors for me in this otherwise closed world.

During the time of my stay in the Institute, a group of climate scientists worked on the reconstruction of past climates. The director of the Institute, Hans von Storch, is a renowned climate researcher, who traveled around the world, represented the Institute and participated (and initiated) debates on the global level. The activities ranged from high water management to the hockey stick debate, from policy advising and public information to the management of the Research Institute. Climate and coastal research is a nervous system full of interdisciplinary and transnational projects and a wide range of research topics; I tried to make sense of it and to follow some of these activities.

Practically speaking, following the actors in a literal sense was possible only to a very limited degree, because the mobility of scientists easily exceeded the bounds of my research budget. But climate change is a hot topic, and society has a lot of questions. Regularly, research results of the Institute were published in the media, the director gave interviews and public speeches, and there was a permanent output of scientific articles and papers. Furthermore, scientists are avid bloggers. Thus, publications in *Nature* or *Science* are commented on in the blogosphere. Following these virtual communications helped me enormously to understand the relevance of some of the findings, inside and outside of the scientific community. Scientific publications, media presence, in-depth interviews and ongoing informal contacts allowed me to follow more or less continuously the process of research that takes place on the coast, at the Institute, at transitory sites and in virtual space. I learned to understand the scientists of this Institute as actors in a network that encompassed far more than ‘only’ numbers, statistics, models and calculations. My multi-sited approach, covering a series of seemingly unrelated projects, enabled me to follow these actors in their effort to define global climate change and to localize it in the ‘real’ world. In the following, I will present some of these efforts and try to bring climate change back to the coast, where everything started. I will start with global climate discourse and identify the complex role that climate researchers play in it. In the next part, I will enter a scientific debate about one of the central symbols of climate change, the hockey stick, which was initiated by the Research Institute. In the final part I will show that reflexivity is not the sole privilege of social science, and that climate research brings climate change back to the coast not as an apocalyptic sign, but as a proposition.

### **Climate change and global discourse**

Climate change is everywhere, and it enters public discourse, everyday talk and changes our perception of the world. Climate change is a media phenomenon, and it borrows

its authority from science. In the following I will present an example where climate change is presented as an indisputable ‘scientific fact’, and I will critically discuss its ideological consequences. Discourse analysis is an indispensable tool for any research on highly mediated topics. Climate change as a media phenomenon comes along in the footsteps of environmental discourse, as Nordhaus and Schellenberger show convincingly in their pamphlet ‘The death of Environmentalism’ (2004) and their book *Breakthrough* (2007). The climate discourse of former vice-president Al Gore serves as a perfect example to show this continuity and to illustrate its implications.

Al Gore’s efforts to bring climate change to people’s attention was recently honored with an Oscar and the Nobel Peace Prize, which has undoubtedly made him the most prominent admonisher of climate change in the world. As a side effect and due to the fact that the Nobel Prize was equally shared with the members of the Intergovernmental Panel on Climate Change (IPCC), climate science gained even more public attention and credibility. There is no outside of this global discourse, not even for hard-core climate researchers.

In the film *An Inconvenient Truth*, Al Gore illustrates in a series of animated slides the consequences of climate change. Along with many other examples, he shows a scenario for the North Sea coast from Holland to Germany and Denmark. A blue line symbolizes a wave that advances inland and washes away the entire coast (and my field site!). Obviously, this is a didactical scenario intended to raise awareness and to change people’s minds. While this scenario of localizing climate change is surely based on scientific findings, it surely deserves a closer look.

Naturally, the North Sea coast is always endangered as a sphere of human existence, and more than once terrible storm tides have wreaked devastating damage. Yet at the same time dike building techniques have improved, and in recent years the coast has survived tide peak levels largely unharmed. In a recent keynote speech in Holland, Latour pointed rightly to

the fact that this nation owes its existence to a politics which has taken the dikes seriously and which has therefore practiced a good ‘politics of things’ (Latour and Weibel 2005). But Al Gore does not talk about how to deal with the consequences of climate change; differences disappear behind the big picture of apocalypse.

In doing so, Al Gore’s presentation rests on the idea that society is a static quantity and passive. In the end, he is not interested in the individual case, which is only another example in a series of anticipated catastrophes. It is catastrophe itself that is at center stage, as a warning and a summons to action. Yet this summons is one-sided; it calls only for the reduction of greenhouse gases emissions. Mitigation is doubtless a major concern, but it is striking how little space Gore gives to adaptation to climate change. Nordhaus and Shellenberger rightly suggest that Gore sees adaptation rather as a sin: ‘The truth about the climate crisis is an inconvenient one that means we are going to have to change the way we live our lives’ (Al Gore in Nordhaus and Shellenberger 2007, 106). His summons to action culminates in an exhortation (during the end credits to his film) to replace one set of light bulbs with another. An infinitesimal gesture in view of the dimensions of the problem that he demonstrates. Nowhere even a shimmer of hope for the North Sea coast, and everywhere else too rescue attempts seem futile. ‘That’s because, for Gore’, Nordhaus and Shellenberger observe, ‘it can’t be. As surely as the Bible begins with a fall and ends with apocalypse, humankind’s sins against nature will be punished. “It’s human nature to take time”, Gore says, “But there will also be a day of reckoning”’ (ibid, 107).

Yet it is not only the (imputed) religious intention that surrenders the North Sea coast to wrack and ruin. A further obstacle to a realistic presentation of climate change and its consequences for the coast is Gore’s one-sided use of scientific data. When Gore comes down so heavily on the side of mitigation in the debate between mitigation and adaptation, he is using science to score points against climate change skeptics, who are up to their mischief

particularly in the United States. Science thereby becomes for him a producer of irrefutable truth, and climate change turns into an indisputable ‘scientific fact’. As if even this lacked sufficient persuasive power, Gore stresses repeatedly that he is friends with the mentioned scientists, and he uses a soft-focus lens to show the stairway leading to the sacred halls of science. In continuation of environmental discourse where nature was writ with a capital ‘N’, Al Gore writes climate with a capital ‘C’ and science with a capital ‘S’. Nordhaus and Shellenberger attack this attitude at length in order to open up climate discourse for new strategies of action - no longer a single-issue politics like environmentalism, which ends in the creation of a national park or a nature reserve, but rather a climate politics that is worthy of the name and implements far reaching political strategies. Paradoxically their critique of Al Gore’s vision is part of their attempt to take climate change seriously and to ‘keep it real’ as a political challenge.

Al Gore’s merit is surely that he has anchored climate change in public consciousness. But this climate change is localized only in a vague Somewhere or Disneyland, as the collage on a title page of an issue of *Vanity Fair* illustrates: Leonardo di Caprio poses before an iceberg with Knut, the German polar bear. The North Sea coast, however, was and is really threatened by floods, as are many other low-lying regions built near the water. Al Gore bluntly uses the authority of science with a capital ‘S’ to make his point against the skeptics and for mitigation over adaptation. But even though Al Gore takes science as a kind of hostage, my next example will show that many scientists eagerly jump onto this bandwagon.

### **Climate and catastrophe**

When in August 2002 the Elbe River in East Germany burst its banks as the result of heavy rains and caused serious flooding, the Institute for Coastal Research commissioned me to make an analysis of the media’s treatment of the disaster, particularly with a view to the role



of science.<sup>2</sup> The Institute is home to specialists on the Elbe waters and had sent a research ship up the river during the floods to make on the spot measurements. One of the objects of the commissioned media analysis was certainly to measure the success of such actions in the media - an important factor in times of the reorganization of the research landscape.<sup>3</sup> Above all, however, the work afforded me surprising new insights into the nature of climate change.

Striking was that, from day one, the flood disaster was placed in relation to climate change. Climate experts appeared on talk shows, journalists penned admonishing commentaries in which they interpreted the event as punishment for man's heedless treatment of nature. Commentators declared the Elbe flood to be the first real climate catastrophe in Germany. Although on the talk shows climate researchers drew this connection only more or less directly, most confirmed that such a connection was more than possible. Only few voices were raised that pointed out the lacking scientific evidence for this. But in spite of these objections, the media now repeatedly and automatically produce a direct connection between specific events and climate change, whether with Hurricane Katrina or recently with Myanmar.

But there were also other and more solid lessons to be learned from the Elbe flood. The media followed the actions of the emergency services, disaster control and politicians in minute detail; they called for donations and shows of solidarity and commented upon all these euphorically as manifestations of an active German reunification following the fall of the Berlin Wall. By comparison with Hurricane Katrina, the Elbe flood was managed fairly well (von Storch and Krauss 2006). Thanks to government compensations, many of the victims were better off after the flood than before.

In a cause analysis at a workshop of the Institute for Coastal Research on the subject of 'flood management', it became clear that the bulk of the damage resulted from settlement

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<sup>3</sup> On research under the conditions of a radically changing German knowledge politics see Krauss (2007).

and the subsequent loss of flood plains along the Elbe. Yet such insights hardly penetrate to the public sphere. Time and again in the public sphere the debate has shifted from the necessity of disaster control and foresightful politics to mitigation as the only answer to climate change, and this continues to the present day with each fresh catastrophe.

Referring to climate change adaptation is also a flash-point within climate research. When after the flood an interview with the director of the Research Institute, von Storch, about climate change appeared in a German weekly under the optimistic quotation ‘We’ll whip that’ (Stampf and Traufetter 2003), his colleagues in climate science wondered aloud whether this didn’t undermine the effort to rouse public awareness. In his interview, however, von Storch pointed to social dynamics and to the uncertainties attached to the scenarios, without disputing the existence of a man-made climate change. He emphasized that adaptation is a preventive measure, since natural disasters happen in any case. Climate politics become cynical when it does not comprise disaster control, even if many a climate researcher has surfed into the limelight on the wave of a catastrophe. Climate research polarizes; it is a fight with no holds barred. But climate is also a thing that assembles and shapes new coalitions or enforces old ones. Time, then, to turn to the inner circles and discussions of climate research itself.

### **Constructing climate change: the hockey stick as a symbol**

‘Global climate is a model’, as Tsing (2005, 101) rightly observes. It is a scientific construction by means of global climate models, which rest in turn on weather statistics. As we all know, it doesn’t look altogether good; all values - emissions, temperatures - are heading upwards. Following the IPCC<sup>4</sup> report in 2002, the curve describing this tendency, called the ‘hockey stick’, became an icon of man-made climate change far beyond the bounds of the scientific community. Whereas over 900 years of climatic variation yields a figure on a

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<sup>4</sup> Intergovernmental Panel on Climate Change

graph that looks like a prone (if unsteady) stick, the curve rises steeply with the advent of industrialization - the blade of the hockey stick. The curve is also called the Mann Curve after its creator. My first intense encounter with this diagram was at the IGBP<sup>5</sup> Global Change Conference in Amsterdam in 2002. The conference was a run-up to the negotiations about the Kyoto treaty in the Haag and its goal was to use scientific evidence to direct public attention to dramatic climatic developments, to provide the press with material and, possibly, to influence the negotiations. The array of keynote speakers from climate research was correspondingly impressive. Four years before Al Gore's *Inconvenient Truth*, top-class scientists delivered one power point presentation after another. The pictures showed the beauty of planet Earth, its diversity of species, but also droughts, floods, starving children, wars, malaria and more. All this was repeatedly interwoven with the hockey stick graph for scientific support. The message was 'climate change is real', backed up scientifically and visually. In the meantime, the hockey stick has become a world-wide symbol for man-made climate change. The accompanying apocalyptic rhetoric is not only the work of the media, but is also often enough, as was the case in Amsterdam, preset by climate researchers. Yet delicate connections via the hockey stick arise not only between science and the public, but also within science itself (from which the media are never entirely excluded).

### **Breaking the hockey stick: the politics of climate research**

Back at the Institute, the contrast between this media-oriented conference and the everyday routine of climate researchers seemed to me immense. One work group at the Institute was studying the paleo-climate, reconstructing climate phases that lay in the Earth's distant past. I learned something about the use of proxy data, about various climate models, and become somewhat acquainted with concepts such as downscaling, nesting and the like. Still, I often had the feeling that I didn't really understand the language of this tribe or the excitement they

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<sup>5</sup> International Geosphere-Biosphere Program

felt about their research. The same feeling often crept over me that I have when a computer expert explains something to me, but since I have missed the beginning can't follow. This 'lag period' at the Institute was brought to an end by two consecutive events that created a great stir in the global research community and in the public sphere, and again afforded an insight into the networks that produce climate change, with the Institute as an important actor. In both cases, the director of the Institute, Hans von Storch, was at center stage: first as short-term editor of a scientific journal and ostensible champion against the climate skeptics, and then as a climate researcher who was suspected of being a skeptic.

Von Storch was one of ten editors of the peer reviewed journal *Climate Research*, all of whom were on an equal footing. In 2003, the journal published a controversial article by Soon and Baliunas in which apparently doubtful data is used to place the theory of man-made climate change in question. Climate skeptics in the American Senate invited Soon to a hearing with the intention of using the (allegedly) scientific evidence to undermine the plans of their colleagues McCain and Lieberman for the reduction of greenhouse gas emissions. There was protest in the scientific community that the article rested on false data. As a consequence, the publisher of *Climate Research* appointed von Storch as the sole editor so as better to supervise the peer review process which the disputed article had passed without objection. The first thing von Storch did was to write an editorial for the next issue in which he criticized Soon's article and the evidently miscarried peer review. The publisher, however, prevented its publication because all the editors had first to give it their agreement, an agreement which von Storch then argued would be impossible since at least one among them had approved Soon's paper. So von Storch, the freshly appointed editor, resigned the position in protest, followed by half the editorial board (Goodess 2003). These events caused a flurry not only in the climate blogosphere; the *New York Times*, the *Wall Street Journal* and the *Journal for Higher*

*Education* also reported them. Soon was suspected of being funded by NASA, the NOAA and the oil industry, and having deliberately played into the hands of the skeptics.

Von Storch and his Institute soon found themselves in the thick of the further debates, which gave me as an observer a better insight into climate research in times of climate change as a ‘universal’. In a publication in *Science*, Storch and others demonstrated that the hockey stick curve rested on false methodological assumptions (von Storch *et al* 2004). The criticism pertained not to the blade of the hockey stick (that is, the rapidly rising curve), but rather to what Mann and his colleagues maintained has been the relative constancy of climate in the last thousand years. The model calculations of von Storch *et al* refuted the data computed by Mann *et al*, detecting, for example, an earlier warm phase that approximately resembles the present one, and a greater variation during the Little Ice Age than had been assumed. This is obviously a purely methodological criticism of the Mann curve, but it caused a great stir. The stick of the hockey stick had disappeared or at least become unrecognizable. The article triggered a vehement debate in the climate research community; everyone’s nerves were frayed. Was von Storch playing into the hands of the skeptics? Is it ethically defensible to publish such an article in view of the imperative to do something against climate change? Is the criticism by von Storch *et al* of the climate community’s treatment of proxy data, which formed the basis of their objections, justified? Was Mann’s work slipshod? Why didn’t von Storch *et al* quote two papers that had already come to the same conclusions a year before? Had not von Storch taken part himself in compiling the IPCC report in which the hockey stick theory played so prominent a role? The debate conducted in the blogosphere reads like a scientific detective story. All participants spoke out in a blog of the journal *Nature*, where these points were sometimes vehemently and very inconsistently discussed.<sup>6</sup>

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<sup>6</sup> See, e.g., Pielke, Roger A. (2005): “Prometheus: On the hockey stick archives”. [http://sciencepolicy.colorado.edu/prometheus/archives/climate\\_change/000480on\\_the\\_hockey\\_stick.html](http://sciencepolicy.colorado.edu/prometheus/archives/climate_change/000480on_the_hockey_stick.html). July

Such an event of course is highly political, and representatives of American politics again played a role. One politician sent questionnaires to three outstanding figures in the debate; von Storch spoke about his findings before a committee of the House of Representatives (von Storch 2007b; Storch and Zorita 2006). He insisted that politics should not determine research, and that the peer review process and methodological debate must remain at the center of a serious discussion about climate science.

In an interview in the German news magazine *Spiegel*, which again had broad repercussions in the scientific blogosphere, von Storch called the hockey stick theory ‘nonsense’ (von Storch 2004); in an article in the same magazine, bearing the eloquent title ‘A Climate of Staged Angst’, he said the atmosphere in climate research reminded him of the McCarthy era (von Storch and Stehr 2005). There was reason to suspect, he continued, that the gatekeepers of publications sometimes acted like censors to exclude dissenting opinions. Journals like *Nature* or *Science*, on the other hand, tended to publish only research with high visibility and public effect, neglecting work from the scientific community that was unintelligible to the outsider but methodologically important. Climate research, he concluded, has been caught in a trap between mitigation and adaptation, between skeptics and admonishers, between liberals and Republicans (in the United States).

Von Storch illustrates this situation using the example of two bestsellers that deeply influenced public perception of climate change at this time: Roland Emmerich’s film *The Day After Tomorrow* and, as its opposite number, Michael Crichton’s *State of Fear*. Both, according to von Storch, use partially false elements in order to make certain realities vivid: scientists no longer occupy an ivory tower. In Emmerich’s film it is the admonishers whom no one heeds; in Crichton’s book it is the agents of the environmental movement who unleash

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6, 2005 Edition, or [http://blogs.nature.com/climatefeedback/2007/05/the\\_decay\\_of\\_the\\_hockey\\_stick.html](http://blogs.nature.com/climatefeedback/2007/05/the_decay_of_the_hockey_stick.html); see also [http://en.wikipedia.org/wiki/Hockey\\_stick\\_controversy](http://en.wikipedia.org/wiki/Hockey_stick_controversy)> all accessed on May 18, 2008

an intellectual (and then later a real) terrorism in order to persuade the world of climate change.

In a blog von Storch commented in retrospect that he was satisfied with the debate over the hockey stick (in Pielke 2005b). It triggered, he said, a moment of reflection about the peer review process and methodology, and its repercussions reached to the IPCC and its new reports, which reflected positively the results of the debate and obviously changed the climate curve, which now resembles less a hockey stick without changing the message that climate change is real and that it is urgent to act.

It only seems a long way from everyday routine at the Institute for Coastal Research, where the 'nerds' sit before their computers and model climate, talk in whispers, drink coffee and eat in the canteen, to the IPCC report that pitches the world into a state of alarm. In between lies a world full of excitement, dispute, openly and tacitly fought out conflicts, with renowned climate researchers like von Storch serving as influential actors and intermediaries. Climate research does not take place outside the world but in it, and von Storch harbors no doubts about the social construction of scientific facts, though he insists on the accuracy of methodological approaches in climate science. Astonishingly (for a cultural anthropologist heavily laden with prejudices), von Storch not only sees the clamour that accompanies climate research in the world as a component of his own scientific curiosity and work, but he makes it part of his climate research activities.

### **The reflexive positivist**

Climate change cares little about disciplinary boundaries or the borders between science and the public sphere. For years now von Storch has been working together with the sociologist Nico Stehr. Together they have published a series of articles and a book (von Storch and Stehr 1999) that place climate change and the fear of climate change in a historical perspective. They have shown that human actions have always been ascribed as having positive or

(especially recently mainly) negative effects on climate. Both the improvement of climate by human progress and its endangering by natural catastrophes are precursors of contemporary climate angst. Deforestation, the invention of the lightning rod, atom bomb tests and the burning oil fields of the Iraqi war have all been interpreted as catalysts of a 'nuclear winter' or the like. These fears have proven to be largely mistaken, which distinguishes them from the man-made climate change that has been detected today. Von Storch and Stehr have shown that both climate angst and climate research are socially conditioned (von Storch and Stehr 2000) and have emphasized that uncertainty is a constant of science. This uncertainty consists above all in the vast, dynamic unknown called 'society'. Earlier climate researchers erred in their predictions because they were unable to foresee social developments such as the steam engine. Today we are again confronted by developments that would have been inconceivable only a few years ago. All scenarios rest on the assumption, and herein lies the greatest error, that the present is an immutable condition.

Yet false assumptions often trigger the right actions, as Storch and Stehr (2006) have shown by reference to a case described by the Swiss environmental historian Christian Pfister. Scientists traced flooding in a Swiss valley to the deforestation of surrounding mountains, but they forgot that the river had always overflowed its banks. Nevertheless, the consequent political decision bore fruit: reforestation and its positive consequences, even if on the basis of a false scientific analysis.

Such examples show that climate research is a science located 'between academic curiosity and cultural conditioning' (von Storch 2007a). Does it follow from this that there is no truth about climate change but rather only more or less good climate research? At any rate, the climate scientist as a reflexive positivist is extending the networks and adding new actors such as 'society' that in turn influence results and the direction of research.



In order to strengthen climate research, Hans von Storch and other climate scientists in Hamburg award every year (since 2001) the Brückner Prize (named after the founder of modern climate research). Since then, its recipients have included the above-mentioned Christian Pfister and the American science studies researcher Pielke, who have been honored for their interdisciplinary and border-crossing work.

The politics of climate research is the specialty of the sociologist Roger Pielke jr., who is the director of the Science Studies Centers in Boulder, Colorado. In his publications and blogs<sup>7</sup>, he has analyzed and commented upon the previously discussed debates and the policies and politics of climate science. In publications like *Nature*, he is an important exponent of adaptation, and so of the necessity of being prepared for disasters whether or not they are caused by climate change (Pielke 2007a). His criticism of the interpretation of individual disasters as symptoms of climate change rests on both an intimate knowledge of the debates within climate research and the debates in the public sphere. To bring back society into the climate debate is one of his main arguments against those who exclusively focus on mitigation efforts; climate change is already happening, and adaptation saves lives (Pielke 2005a). In his new book, Pielke introduces the idea of the ‘honest broker’ (Pielke 2007b). The honest broker is a scientist who enters into social questions and offers society scenarios or propositions that both include uncertainties and provide various opportunities for discussion appropriate to the questions. Pielke distinguishes the honest broker from three other types of scientists: those who completely shut themselves off from the outside world, those who openly advocate and work for a specific goal, and finally those who serve as stealth advocates - who, for example, draw a direct connection between climate change and an individual event like the Elbe flood for didactical reasons. In doing so, they take an illegitimate shortcut on the way to localize climate change.

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<sup>7</sup> <http://sciencepolicy.colorado.edu/prometheus/>

Such awards make plain that climate research is an open field which is shaped by individual climate scientists. But how does the role as a honorary broker look like in practice? How to bring climate change to the coast in a way that is more real than the one envisaged by Al Gore?

### **Localizing climate change: bringing it all back home?**

The North German coastal landscape is the result of a centuries-long interaction between human and non-human actors, or more simply put, of land reclamation by means of dike building in a region constantly threatened by storm tides. The predicted rise of sea levels is, of course, bad news for this coastline. Climate is here a post-environmental problem, too, in a very literal sense: in the mid eighties, the coastal shelf was declared a national park, which was fiercely contested by local inhabitants. It took almost two decades to close this conflict, in which locals had suspected science to sit in the same boat with environmentalism. While the ‘nature people’ propagated ‘Nature’ as a moral authority based on irrefutable ‘Science’, their actual practice differed significantly. It was only after negotiations about each and everything that their national park was accepted. Today ‘nature’ is an attraction for eco-tourists, and the coastal shelf one of the best-research coastal ecosystems worldwide. Most of all, the dikes have been left untouched by environmentalism. It was one of the central arguments of the local protest that coastal protection always has to be privileged over nature conservation.<sup>8</sup> Localizing climate change comes after localizing nature; in order to be successful, there are many lessons to be learned from these previous conflicts.

The North Sea coast is one of the Institute’s main areas of study, and here as on all low-lying coasts predictions about climate development are of particular interest. By means of improved models and thanks to the relatively good data records (long and reliable series of measurements), it has become easier to make realistic forecasts of regional climate

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<sup>8</sup> For a detailed discussion of these conflicts see Krauss (2006).

developments (Woth and von Storch, 2008). In the nineties there was increasing number of storms and storm tides that made people fear the worst. But newer research at the Institute shows that this increase was restricted to a certain phase and that storm activity has recently abated. On the other hand, the scenarios based on the new calculations show that the predicted rise in sea levels and longer duration of storm tides will exert higher pressure on the dikes on the long-term, so that preventive steps must be taken. The predictions also forecast, however, that the present dikes currently should be sufficient with good maintenance. Interestingly enough, the media reported after an interview with the climate researchers, that there would be no problems for the next thirty years; this is a time span that reportedly was not mentioned in the interview, but invented by the journalists.

Parallel to these new studies, the Institute presents its findings to the public for discussion. The Institute has set up a permanent 'Climate Office' that provides information to coastal politicians and inhabitants, and the director of the Institute gives repeatedly talks to regional institutions and organizations. He never misses to mention that climate change will happen and that it is man-made. But he also never ceases to mention that he only can present scenarios on the basis of actual knowledge, including all uncertainties. On a higher level, there are already institutionalized co-operations for example with the Hamburg port authority, which wants to be prepared for future challenges.

During the debate on the national park, the subject of coastal protection and the dikes was a flash-point. The dikes were non-negotiable for the coastal population; without a fixed agreement on the principle of 'coastal protection before nature protection' no conversation was possible. Proposals to try out new forms of coastal protection over the longer term fell immediately under the general suspicion that conservationists put the protection of nature before the safety of the people behind the dikes. Once this debate came to an end and the national park more or less accepted, a new discussion slowly starts to unfold. There have been

hints of this in recent debates on the effects of climate change in which local representatives of coastal protection and coastal research have discussed various scenarios in respect to rising sea levels. Should some dikes be abandoned and the land submerged? Should several islands be further protected or left to their fate? But then what about the dikes as parts of a material culture, as symbols, as units of social organization? Can scientists be trusted in future not to let themselves again become the hostages of politics, as it happened during the national park debate?

Climate change is sure to produce a new collectivity, a new coast, a different coastal population, just as it is bound to change climate research. The discussions about the hockey stick and the future of the coast are linked in manifold ways. Localizing the global involves necessarily redistributing the local (Latour 2005, 173); this is true for nature as well as for climate change.

### **Conclusion**

It is a long way from the Research Institute to the North Sea coast. This is not only true for the ethnographer, but also for the climate scientist. Global climate is a model, and downscaling is on first sight nothing but a complicated calculation. But a closer look offers an insight into the many ramifications, processes and values involved. A network of actors and assemblies is attached to climate, seamlessly transforming scientific facts into matters of concern. Anyway, climate science is not a closed system from which political action can be deduced, but it can offer well-crafted arguments and well-made propositions. The debates about mitigation versus adaptation and skeptics versus admonishers have shaped not only public discourse, but they are an integral part of climate science. Following climate scientists and their debates seems to be a good way to find out what it means 'to keep climate change more real'; such a multi-sited approach is not about debunking climate science or adding

social dimensions, but about showing its inherent richness and helping to bring it into democracy.

Multi-sited ethnography, consisting in longer and shorter research stays and occasionally in unusual methods, can afford an insight into how climate change is a construction that needs to be handled carefully. Localizing has proven to be an activity that points in all directions, crossing the boundaries of disciplines, but also of science and society. Climate change is real, and in order to keep it real science and democratic decisions, functioning administrations and networks, rectifying conflicts and a certain pragmatism are needed. Only that is doable which can be done locally. Climate research cannot shorten the democratic detour, but only offer 'If – then' scenarios on the basis of the best possible data. Climate is part of the spheres of human existence which we must keep stable and livable, whether we like it or not. And localizing climate change is an activity that has only just begun.

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