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Following the Surfers

The Issue of Climate Change and Internet Based Democratisation

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Abstract

Human induced, or so called anthropogenic climate change is an issue that is widely discussed. A simple search on the internet is, however; likely to leave an internet surfer in utter confusion rather than stimulating knowledge around the issue of climate change. This thesis was spurred by what seemed to me as a lack of a co-ordinated approach towards spreading information about climate change on line and the ‘absence’ of a structured debate to meet a public that consults the internet in search for knowledge. This thesis aims to examine the prospects of internet based democratisation in regards to the issue of climate change.

An attempt is made to examine the current internet based debate from the perspective of the public with a main focus on the United Nations organisations; the Intergovernmental Panel on Climate Change (IPCC) and the United Nations Environmental Programme (UNEP). Although these two organisations are highly central actors in the climate change debate, it is curiously enough found that they are almost invisible on line. It is suggested that the United Nation organisations claim centre stage on the internet as they do in other parts of society.

A central argument in this thesis is that the public should be included in the debate and that the issue of climate change should be democratised to a wider extent than it is today. Such democratisation can be seen to be desirable from the perspective of the public, but it may also be interesting from a scientific or political standpoint in that it may lead to more credible knowledge and increased awareness around the issue of climate change.

It was found that IPCC does not prioritise addressing the public, and that the organisation often relies on UNEP for this purpose, making the latter organisation more interesting for the purpose of this thesis. UNEP has stated objectives to reach and include the public in the issue of climate change on a global scale. In engaging an international public, it would not be unreasonable to consider the use of the World Wide Web. While not over-enthusiastically embracing the internet as a medium for democratic debate, this thesis suggests that UNEP initiates careful and gradual internet based democratisation in regards to the issue of climate change.

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1. Introduction

I have chosen to write my thesis around the prospects of internet based democratisation in regards to the issue of climate change. I have for quite some time, been concerned with the issue of climate change and I have made a point of keeping myself updated in regards to this topic. I am part of a generation that has grown up with the internet as an important resource for finding information and I am used to finding the answer for virtually anything by searching the internet. Using a combination of ingenuity in conducting searches and critical judgement in regards to the results of my search, I am used to quickly and easily gaining sufficient knowledge to understand a phenomenon. However; through my own internet based search for information concerning climate change, I have encountered a situation that I find puzzling. Rather than offering a clarification of questions one may have regarding climate change; one may easily be left in utter confusion after a search on the internet. There is an abundance of highly contradictory information around the issue and a severe lack of any form of structured debate as is also noted by Richard Rogers and Noortje Marres (Rogers & Marres, 2000).

One does not have to delve very deeply into the issue of climate change to gather that the Intergovernmental Panel on Climate Change (IPCC) is a central actor. One might expect that an organisation vital to the debate around climate change to have a strong presence on the internet, but this is not the case. I am baffled by the absence of a structured debate and the lack of a coordinated approach towards spreading information around climate change on the internet. This is the reason for my choice of topic.

I wanted to examine the existing debate around anthropogenic climate change more thoroughly and see how the debate has developed. I was especially interested in understanding the current role of the organisations within the United Nations system involved in the debate. In examining the current debate, I have made a point of attempting to see the debate from the perspective of the general public. I also wanted to examine the attitudes towards targeting the public with information concerning climate change over the internet and towards the inclusion of the public in matters of science. The idea is to see if there is any inclination towards including the public in the current debate around the issue of climate change and whether the internet could work as an arena for such debate in the future.

The thesis fits well into the field of Science and Technology Studies (STS) in its broad social focus. The thesis discusses the science, politics and economics involved in the

issue of climate change while specifically examining the prospects of internet as a technology in regards to this issue. The thesis fits in with a longer tradition within STS of arguing for public involvement in science and democratisation of science and technology. The thesis contributes to a more recent movement within STS, more specifically within Actor Network Theory (ANT); towards the enactment and study of issues and public controversies on the internet.

1.1. Problem Statement

The problem that spurred this thesis is a lack of any kind of structured debate to meet a public that consults the internet in search for knowledge related to the issue of climate change. It is reasonable to assume that this problem is a result of insufficient efforts towards the inclusion of the public in the issue of climate change and a limited focus on the internet as a medium. This thesis strives to combine the inclusion of the public with the internet in an attempt to examine internet based democratisation of science in regards to the issue of climate change. An analysis of actors central to the issue of climate change is conducted with respect to their current attitudes and actual practices in relation to the internet and the inclusion of the public with the intent to see whether internet based democratisation of the issue of climate change is viable – and if so; desirable. This thesis examines whether the internet is a technology well suited to increase public understanding, involvement and knowledge in regards to the issue of climate change.

1.2. Structure of the Thesis

An introduction has already been given, presenting my reasons for the choice of topic, and also presenting the problem to be investigated. Following this section on structure is a chapter on methodology. The methodology chapter introduces concepts from STS that relate to methods and outlines the approach that will be drawn upon throughout the thesis. The subsequent chapter is called “Background Material, Theory & Analysis” and is, as the heading implies, a blend of background material, theoretical resources, analysis and discussion. Although the chapter in question could have been several chapters, I have chosen to merge these elements into one chapter as it is difficult to completely distinguish between them and because it makes the text flow more easily. Furthermore; the field of STS is not the right context for creating and maintaining unnecessary distinctions.

Starting with an introduction to the issue of anthropogenic climate change and the actors that set the issue in motion, the chapter moves on to show how the science involved in the issue of climate change has to be seen as interlinked with other aspects of society such as politics and economics. The chapter further moves on to discuss public understanding of science and the exclusion of the public from debates regarding science and technology. The chapter continues towards discussing democratisation of science and different degrees of such democratisation. The idea that the internet might be an arena for a democratised debate around the issue of climate change is introduced, but it is also stressed that the internet should not be uncritically embraced for this purpose. The chapter moves on to discuss ways in which the internet may stimulate the creation of knowledge and the traceability of controversies with an emphasis on the concept of inscriptions. The subsequent section attempts to make practical use of the traceability that the internet offers by mapping the climate change controversy on line. The mapping of the climate change controversy identifies central actors and brings attention to a network of internet sites that together constitute the current debate.

Not surprisingly; IPCC is found to be a very central actor and is therefore an important focus of the analysis. Through examining IPCC, it is quickly found that the organisation co-operates with UNEP in ways that make UNEP an important focus of this thesis. The main focus of analysis is therefore on the two United Nations organisations IPCC and UNEP. The two organisations are analysed with respect to their attitudes towards democratisation of science through documents and interviews, and it is also attempted to find actual efforts to include the public in the issue of climate change. Attitudes towards the use of the internet are examined through documents and interviews and the actual use of the internet is examined through analysis of websites. Actors that attempt to refute the knowledge produced by IPCC are examined and an organisation called the Cooler Heads Coalition receives special attention. The website of the Cooler Heads Coalition is analysed and compared to the website of UNEP to examine how they actually appear to a public that consults the internet for knowledge relating to the issue of climate change. The chapter moves on to show how different actors involved in the controversy may be dominant in different arenas in society. The chapter questions the way the scientific community, and in this case IPCC, interacts with the public. The subsequent section discusses a divergence between IPCC and the field of STS in attitudes towards democratisation of science. The chapter finally discusses the prospects of internet based democratisation of science with respect to the issue of climate change. The final chapter is, like it should be, the conclusion of the thesis. References and bibliography is included as well as appendices at the end.

2. Methodology

A principle relating to methodology is that of following the actor; a concept that was developed by Bruno Latour and is a crucial element in Actor Network Theory (ANT) (Latour, 1987). Rather than accepting ideas about what actors within the scientific community are supposed to do according to established norms, Latour went back to the beginning and followed these actors closely to see what they actually do disregarding a priori assumptions. The approach involved following actors around within the scientific community, but it also involved not stopping at the laboratory door when the scientists that were followed moved in and out of it (Latour, 1987). The idea was to follow the actors wherever they may go or whatever they may do. The concept will not be used in the same way as Latour did, but it will be drawn upon in several ways in this thesis.

Before continuing; it might be necessary to highlight a concept within Actor Network Theory (ANT) which may seem peculiar for anyone not familiar with the theory. ANT does not distinguish between actors that are human and non-human, a concept that will be used in this thesis. One way that the concept of following the actor will be used is that the issue of climate change, as a non-human actor; will be followed wherever it may go. The concept of following the actors can be connected to another central insight within STS; that science is intricately linked with other parts of society. In a 1992 book edited with Wiebe Bijker and Trevor Pinch; Thomas Hughes famously used the metaphor of a seamless web to describe the way in which science and technology merge with society as a whole, implying that sharp distinctions are virtually impossible (Bijker, Hughes & Pinch, 1987). The issue of climate change will not respect the formal boundaries between science, technology and society – neither will this analysis. Although it may be comfortable and less confusing to maintain the traditional boundaries between science and society, it may be more rewarding to reject them. Consistent with the concept of ‘following the actor’; it may be more fruitful to pursue the issue of climate change beyond the formal borders of science and into the social sphere (Latour, 1987). Actor Network Theory (ANT) has documented how practices in science do not respect the formal separation between science and society (Marres, 2004). In the same way that science does not respect these formal boundaries, the case study presented later will follow the issue of climate change even though it will go beyond traditional formal boundaries.

Another way this thesis draws on the concept of following the actors is by using literature that makes use of the concept such as the tracing of actors on line discussed by Richard Rogers and Noortje Marres (Rogers & Marres, 2000). I will also use my own version of the concept in analysing the internet pages of relevant organisations. In analysing websites I have aimed to take the perspective of an imaginary user of the internet that is new to the controversy around anthropogenic climate change. The point has been to see what impression a user of the internet will gain of the issue of anthropogenic climate change from the pages analysed through searching the internet. As a common term for using the internet is 'surfing', I could not resist the temptation of coining the term 'follow the surfers' referring to my approach. The approach is meant to give an impression of what meets a public that refers to the internet for gaining knowledge about the issue of climate change. The approach is well suited to highlight important aspects of the debate on line and works as a foundation for further analysis. The first analysis is one regarding the website of the Intergovernmental Panel on Climate Change (IPCC). The second analysis is a comparison of the United Nations Environmental Programme (UNEP) website and the internet page of an organisation called the Cooler Heads Coalition. A limitation of my analysis is the small number of web pages analysed as it does not yield a full understanding of how the issue of anthropogenic climate change is represented to an internet user. A better understanding could be gained by analysing all pages that appear in the top results in a search. This was not done for two reasons; I did not have the time to do so, and it would result in a loss of focus for the purpose of this thesis.

A crucial part of the preparations for the thesis has been the search for books and journal articles, which has been necessary to establish a theoretical base for the thesis, and for constructing the case study. This is a process of reviewing and selecting literature that is suitable for the thesis and this process will not be elaborated further as it is fairly self explanatory. The literature used to establish a theoretical base for the thesis mainly involves literature from within the field of STS, although some material has been drawn from outside this field. While using STS concepts and literature, this thesis aims to engage critically with STS theory. Especially in regards to discussions over democratisation; the question is posed whether STS necessarily has the 'right' answers.

A multitude of sources has been made use of in acquiring the knowledge necessary to construct the case study. Sources include books, journal articles, interviews, official documents, news paper articles, a documentary film and internet pages. Internet pages have already been discussed in regards to analysis, but it has also been necessary to rely on internet

pages for references. The following sections will elaborate on the use of the other sources discussed earlier.

Two formal interviews and several informal conversations were conducted in the period between 23 April and 14 June. Rather than conducting many interviews, attention has been focussed on two informants that are highly relevant and that hold considerable insights in regards to the issue of climate change. They both hold central positions in regards to the issue of climate change and are directly involved with the field of study, which has been the most important criteria for the choice of informants.

The first interview was conducted by telephone with Øyvind Christophersen; senior adviser at the Norwegian Pollution Control Authority (SFT) and head of the Norwegian delegation to the Intergovernmental Panel on Climate Change (IPCC). He was interviewed with respect to the workings of IPCC and the attitudes of the organisation towards public outreach and the use of the internet. Informal conversations per telephone were also held with Øyvind Christophersen. He was very helpful in illuminating processes within the United Nations system, especially the relationship between IPCC and the United Nations Environmental Programme (UNEP). He also pointed out the official documents of IPCC relating to communication strategies termed 'Outreach' documents.

The second interview was conducted with Svein Tveitdal; senior adviser at UNEP/GRID-Arendal. Tveitdal has formerly functioned as director of UNEP/GRID-Arendal and as the UNEP Division Director for Environmental Conventions and Policy Implementation in Nairobi. He was interviewed with respect to the workings of UNEP and the perception of the organisation of the controversy surrounding the issue of anthropogenic climate change. The interview also had an aim to determine the attitudes of UNEP towards public participation and the use of the internet. Tveitdal was very helpful in accounting for attitudes within UNEP and in pointing out relevant material within the United Nations Framework Convention on Climate Change (UNFCCC).

The interviews were mainly conducted in order to gain an insight into the processes and attitudes within the complex United Nations system with a focus on IPCC and UNEP. The informants have been helpful in highlighting aspects of the case that do not emerge from official documents. A point has been to ask open ended questions encouraging informants to give their account in their own words. The information discussed has not been of controversial or sensitive nature. Informants have; when discussing the same things, provided coinciding accounts of processes and they have been open in terms of referring to information that is openly available and to information that is less tangible and is embedded in the

organisations. No reason can be seen to doubt anything that has been said. Interviews were conducted in Norwegian language as both my informants and I are Norwegians. Although material from Norwegian interviews has been incorporated into an English language thesis, there is no reason to believe that any important meaning has been lost due to this translation. The references to interviews in this thesis have been approved by the informants.

Official documents that have been examined are termed 'Outreach' documents and concern the communication strategies of IPCC. Outreach documents are produced by IPCC, but apparently also used by UNEP. Outreach documents dating back to 2003 have been reviewed, but material from 2005 and 2006 has been found to be of most use. Supporting documents have also been used, such as compilations of government submissions on information activities and external reports by Communications & Network Consulting (CNC). All documents are available on-line¹.

In searching for information in regards to organisations and experts sceptical to the findings of IPCC, it has been necessary to venture beyond peer reviewed journals and books to gain insights. Although these experts and organisations are quite visible in the public arena, it has been difficult to procure material from peer reviewed journals and books. In regards to the experts in question, some of the most interesting sources of information have been newspaper articles and a documentary film. In regards to the organisations sceptical to IPCC findings, one organisation; the Global Climate Change Coalition has been referred to in peer reviewed journals and books as it was active quite some time ago. Newer organisations such as the Cooler Heads Coalition; was established in more recent time, and is not to be found in such sources. It has, therefore; been necessary to find information about this organisation through newspaper articles and on their internet site. Although it might have been an interesting exercise, it has not been attempted to obtain information about the strategy of the Cooler Heads Coalition through contacting them or ExxonMobil who they are allegedly linked to.

¹ Source: http://www.ipcc.ch/meet/meet_dt.htm Accessed 23/04/07

3. Background Material, Theory & Analysis

Swedish scientist Svante Arrhenius has been considered a central actor in regards to the issue of anthropogenic climate change with his discussion of the phenomenon in 1896. The phenomenon has existed in the scientific community as a theory for more than a century and has caught the interest of many scientists through the years. The issue of anthropogenic climate change has, however, not been confined within the scientific community. The evolution of anthropogenic climate change as an issue is a result of social processes involving scientists, organisations, politicians and the public (Weart, 2003). In line with insights from Actor Network Theory (ANT), one might say that it was not until the theory was circulated outside the scientific community that the science of climate change started 'working'. When the science of climate change was connected to other 'things', be it other issues, people or phenomena; climate change starts to emerge as an issue (Asdal, 2004).

The current controversy is a dispute around the effects of human activities on the global climate system; so called anthropogenic climate change. The debate has multiple aspects, such as; whether anthropogenic climate change is a reality; what consequences human induced climate change has and what actions should be initiated as a response in order to limit possible adverse effects. Although the debate is ultimately based on findings from the scientific community, the controversy is, as already discussed; not confined within science. The controversy circulates most notably through the spheres of politics and economics in addition to science. This circulation has several implications and will be examined in later sections.

Rather than dwelling on the distant history of climate change as an issue, this thesis will skip directly to a year that can be said to be significant in respect to climate change. This jump does not by any means imply that nothing happened in the almost hundred years that are skipped; it is just too much to include in a thesis. The year 1988 can be seen as an important year in regards to the issue of anthropogenic climate change as this was a year in which the science of climate change was circulated extensively in the social sphere. It was in this year that British Prime Minister Margaret Thatcher warned in a speech to the Royal Society in London that with global warming, "we may well have unwittingly begun a massive experiment with the system of the planet itself" (Boykoff & Boykoff, 2004). The same year, NASA scientist James Hansen testified to the United States Congress regarding

the presence of anthropogenic global warming and the immediate need for action. The same year saw a major heat wave and drought in North America (Demeritt, 2001). 1988 was also the year that the World Meteorological Organisation (WMO) and the United Nations Environmental Program (UNEP) established the Intergovernmental Panel on Climate Change (IPCC) as an organisation charged with determining the causes, impacts and possible responses to climate change².

Margaret Thatcher and James Hansen are two actors that in 1988 took part in circulating the issue of climate change outside the scientific community. Margaret Thatcher is an example of a political actor that took part in circulating the issue of climate change in the political and wider social sphere. James Hansen was an actor from the scientific community that circulated the issue of climate change in mainly the political sphere. The year 1988 did not only see human actors involved in circulating the issue of climate change outside the scientific community. 1988 was, as mentioned, the year in which IPCC was established; an actor that became responsible for circulating the issue of climate change in a wide range of spheres. The North American heat wave of 1988 took part in sensitising the public to the idea of global warming circulating the issue in society (Demeritt, 2001). A more recent example of how the weather has contributed to circulating the issue of climate change in society can be seen in a study published by Nature in 2007 that was widely referred to in the media. The study claims that anthropogenic climate change is responsible for the unstable weather that has been observed across various parts of the planet (Zhang, 2007), linking the science of climate change more tightly to natural phenomena and contributing to the issue of anthropogenic climate change gaining momentum.

For almost a century, climate change was mainly confined to the scientific community (Weart, 2003), but actors outside the scientific community were needed to make climate change a matter of concern (Latour, 2004). A conclusion that has been drawn by numerous STS writers is that science has to be seen as interlinked with other parts of society, which can also be seen in the example just discussed. The example of anthropogenic climate change can be seen to reaffirm the idea of Hughes conceptualising the interaction between science and other parts of society as a seamless web (Bijker, Hughes & Pinch, 1987).

² Source: <http://www.ipcc.ch/about/about.htm>

3.1. The Climate Change Controversy and Public Involvement in Science

An interesting feature of anthropogenic climate change discussed by David Demeritt in his article of 2001 is that it would be difficult to even conceive of the concept without the aid of science. The phenomenon of anthropogenic climate change is so extensive in time and space that it is invisible to our ordinary senses, and can only be ‘seen’ or mediated through science (Demeritt, 2001). This dependence upon science to make tangible otherwise invisible environmental risks is a concept introduced by Ulrich Beck (Beck, 1992). Beck has highlighted the emergence of invisible risks associated with our use of science and technology; a type of risk which climate change is a prime example of. Beck observes how economic growth in our industrial society is sustained and glorified without consideration to the simultaneous growth in hazards connected to it (Beck, 1997). To accompany the growth of industrial society based on the increased production and distribution of goods, Beck sees the emergence of questions regarding the management and minimisation of ‘bads’ such as climate change that are becoming central to the organisation of society. Beck asserts that the public realises that these emerging environmental hazards are by-products of techno-economic development, initiating a self-transformation of industrial society that he has termed ‘reflexive modernisation’ which Demeritt has discussed (Beck, 1992). No longer blindly trusting science and technology as the driving force of progress, the public is more careful and sceptical towards excessive use of technology (Marx, 1994).

3.1.1. Public Understanding of Science

A problem is that the public may have genuine reservations towards the use of science and technology, but this reservation is not necessarily taken seriously and reflected in the scientific community. Brian Wynne has found that the scientific establishment tends to assume, when the public resists or ignores a programme advanced in the name of science; that the public has misunderstood the science. The scientific establishment tends to equate public understanding of science with the public’s ‘correct’ understanding and use of technical knowledge and advice (Wynne, 1995). In making such an assumption, the scientific establishment ironically displays a limited understanding of public understanding of science. Wynne emphasises that while the public may not be able to understand the specific technical details of science, the public may very well be able to understand the processes and methods of science. Wynne distinguishes between science-in-particular and science-in-general; the latter of which the public may understand. This form of understanding is not accounted for in

the scientific community, and the public tends to, in Wynne's own words; be constructed as ignorant. By constructing the public as ignorant while it is expressing a legitimate concern or dissent, the scientific establishment inadvertently stimulates the already present mistrust around science and technology discussed earlier, encouraging yet more public ambivalence and alienation (Wynne, 1995).

3.1.2. Democratisation of Science

In emphasising that the public may very well be able to understand science in its own way, Wynne stands in a longer tradition within STS of wanting to democratise science and technology (Wynne, 1995). Although democratisation of science has been widely discussed within STS, it is not entirely clear what such 'democratisation' entails. Before proceeding, it may be useful to discuss what democratisation of science is in order to show that the term is open to interpretation. The word 'democracy' easily brings to mind politicians, formal voting and legislation, but this is not necessarily what we are looking for. Actually; Wynne does not specify what should be done, but he implies that there is virtually no democracy in science at this stage (Wynne, 1995). Logically; any movement towards the inclusion of the public in matters of science would constitute a 'democratisation' of science. Even something as simple as making scientific knowledge more available and accessible is a step towards including the public and can be argued to be a democratisation of science. Several STS writers are, however, more ambitious. Wynne suggests that the public and the scientific establishment should be brought closer together, rather than being sharply distinguished like they are today. An approach to bringing science and the public closer is the inclusion of the public in the construction of knowledge; public participation in science. Although there may be good reasons for including the public in the construction of knowledge, it is not clear exactly what public participation entails and why one would want such participation.

Walter Lippmann proposed, according to Michel Callon, to turn the weakness of the public – its incompetence; into a strength. Precisely because the public has no direct or vested interests in the issues under discussion, it is in a position to see scientific matters more objectively (Callon, 2005). From a state of initial ignorance, a public may become concerned and transform incompetence into a strength; enabling that public to dare to explore new paths and to develop new and original competencies (Callon, 2005).

Michel Callon claims that Lippmann has already been proved right in his assertion that the 'incompetence' of the public can be utilised (Callon, 2005). Callon uses the practice

of consensus conferences in the Scandinavian countries as an example of how public participation in science has worked. Consensus conferences bring together appropriate groups of randomly selected lay-people with the intent to negotiate different points of view from stakeholders into an acceptable compromise (Callon, 2005). Especially in regards to issues that are unprecedented and without clear solutions, issues need to be made public (Callon, 2005).

Beck suggests that the public should act as an enhancement of the checking of laboratory results and be charged with applying the standard ‘How do we wish to live?’ to scientific plans, results and hazards (Beck, 1992). Demeritt has shown that the public participation suggested by Beck actually involves two distinct activities. One activity involves public checking of laboratory results, which is not currently common in scientific practice. The other activity involves normative checking of the uses of science and technology (Demeritt, 2006). The latter activity suggested by Beck; interestingly resembles what the public is currently supposed to do through exercising their rights under the contemporary paradigm of representative democracy. The point is nevertheless; to show that it may be easier to discuss public participation if it is not seen as a single activity, but different activities that together contribute to an inclusion of the public.

The suggestion of Beck to charge the public with checking laboratory results may have a few weaknesses. A first question to ask is why the general public would be interested in checking laboratory results. A second question to ask is what difference a citizen with no relevant knowledge would make checking laboratory results. Both these questions are, however; addressed by contributions of Collins and Evans in 2002 (Demeritt, 2006). Collins and Evans assert that lay-people as lay-people has nothing to contribute to scientific method. They propose that the public as a whole should not participate in the checking of laboratory results; only citizens with relevant knowledge. In excluding citizens lacking relevant knowledge, Collins and Evans also exclude members of the scientific community without relevant knowledge (Demeritt, 2006). Members of the lay-public that have relevant knowledge in regards to a scientific matter, so called lay-experts; would be more inclined to participate and their participation would be useful. This part of the public is not, as Callon writes; directly involved with the scientific matter at hand (Callon, 2005). By this logic it may be sensible to charge certain parts of the public with checking laboratory results as Beck has suggested.

The suggestion of Beck to charge the public with applying the question ‘How do we wish to live?’ to scientific plans, results and hazards is a different suggestion than the one

discussed above. To ask normative questions of how we want to use science and technology is, as mentioned, part of the civil duty and right to participate in democratic processes. When Beck emphasises this point, he seems to imply that democracy in regards to science and technology can be exercised more effectively than it is with our contemporary paradigm of representative democracy. It is for this public that the argument of Lippmann is particularly well suited. The general public can be seen as incompetent in matters of science and technology, and it is this incompetence Lippmann suggests can be useful. If the general public was charged with asking the normative question of ‘how we want to live’ as Beck suggests, it would attempt to answer this question based on the knowledge available. In addition to trying to resolve such normative questions, the general public could be compelled to scrutinise the scientific base for the debate asking questions wherever something does not make sense. With no relevant knowledge, a public examining the basis for a debate could function somewhat in the same way as the ‘dissenter’ created by Latour. The dissenter is a figure created by Latour as a rhetorical tool in order to illuminate processes and procedures within the scientific community by asking difficult questions based on ignorance (Latour, 1987). Forcing the scientific establishment to direct focus also towards itself may help science become more reflexive.

3.1.3. Issue Democracy

Noortje Marres has examined democratic process with an emphasis on issues related to science and technology (Marres, 2005). She has based some of her work on the debates between the journalist Walter Lippmann and the philosopher John Dewey. The debate between the two was sparked by a review by Dewey of Lippmann’s book *Public Opinion* in 1922. The two writers Lippmann and Dewey had different views on how democracy should work, but they also agreed on several points. They were both clear that the emergence of complex issues in technological societies would pose a problem to contemporary democracy. The complex issues of technological society would increasingly transgress formal borders and present a problem for the democracy of the nation state (Marres, 2005).

Democratic process was seen by Lippmann and Dewey as one of issue formation, while democracy was seen as the practice dedicated to finding settlement for affairs and issues. When existing institutions prove incapable of settling issues, or fail to address them, the public gets involved in politics in the service of the settlement of these issues. Especially issues that implicate people spark public involvement and democratic politics. In the words of

Lippmann: “Men do not desire self government for its own sake. They desire it for the sake of results. This is why the impulse at self-government is always strongest as a protest against bad conditions” (Marres, 2005). Another condition under which democracy thrives is when the problems are too complex and puzzling for anyone to fully understand (Marres, 2005).

Lippmann and Dewey had a similar perception of what the problem was, and they were both looking towards issue politics. Their suggestions for a solution were, however; very different. Lippmann suggested toning down the expectations for public participation in politics and rather relying heavily on expert advice. Dewey, on the other hand; suggested an expansion of democracy where knowledge formation would include experts matched by citizen participation. The problem with Dewey’s solution was that it was not clear at the time how this participation could be put to practice. The suitable tools did not exist at the time, but with the advent of the internet, such participation may actually be possible (Marres 2005).

Marres refers to her discussion of democratic process when she highlights the internet as a possible arena for a democratic debate. In this sense, she seems to address the suggestion of Beck to let the general public participate through asking normative questions of how science and technology should be used in society. Marres does not discuss the suggestion of Beck to let the public check laboratory results, but the one does not exclude the other. The general public could be engaged in a structured debate over the uses of science and technology at a general level, while citizens with lay-expertise could be charged with checking laboratory results contributing to the construction of knowledge that would feed into the general debate.

While acknowledging that there may be potential in the use of the internet, Marres points out that the internet has been over-enthusiastically welcomed as a forum for democratic debate that is intrinsically superior to other media. Marres is clear that she does not uncritically embrace the internet as an arena for democratic debate. The internet is not intrinsically different from other media, but even when accepting this; the internet can be seen to open specific opportunities for the enactment as well as the study of public controversies (Marres, 2005). The following section will show, as Marres has emphasised; that the internet is not intrinsically superior to other media such as print media for example, but that the internet may offer certain enhancements.

3.1.4. Inscriptions Revisited

Bruno Latour discussed in his contribution to the book *Representation in Scientific Practice* edited by Lynch and Woolgar in 1988 the importance of writing and imaging craftsmanship to the creation of new knowledge. He was of the belief that no “new man” emerged some time in the 16th century enabling humans to think differently than before and establish modern science. He started considering a more trivial explanation for the emergence of modern science and found a shift in the way groups of people argued with each other using paper, signs, prints and diagrams which may have contributed to a different way of constructing knowledge (Latour, 1988).

A central idea in Actor Network Theory (ANT), which Latour took part in developing, is that virtually anything can be transformed from its original state into inscriptions. Such an idea may seem fairly abstract, but even an idea such as the one in question can be transformed into inscriptions in the form of the paragraph you are reading now. Newton’s law of gravitation may also be transformed into inscriptions in the form of formulas, while the whole continent of Australia may be represented in the form of a map. These transformations have the advantage that they allow things to be inscribed for example on paper and in that way become mobile. Things can in this way be represented somewhere else (Latour, 1988).

An Iguana can be observed on the Galapagos Islands and transformed into inscriptions in such a way that it can be carried to London and be represented there. It can be transformed into what Latour calls an immutable mobile. It is immutable in the physical sense that it does not change once it has been transformed, but it is also immutable in that it can be reproduced, spread and used to convince audiences in many locations in a sense cementing the knowledge. It is mobile in the sense that it can be moved. If there were any controversy in London over the features of a Galapagos iguana, a representation of the iguana in the form of a drawing would produce a strong and convincing argument. A further advantage of immutable mobiles is that they, as mentioned, can quite easily be reproduced so that the same iguana can be represented at the same time in Beijing, Johannesburg and Sydney.

A feature of inscriptions that is very important in convincing audiences and the formation of knowledge is that they can be superimposed. Various inscriptions of different character such as images, numbers and text may be combined in what Latour calls an optically consistent space. To stick to the iguana; the drawing discussed earlier can be

combined with data showing weight and length; descriptions of habitat, diet and behaviour; statistics over mating seasons and for example a map showing where in the world iguanas can be found – all on a single, flat surface. Without having ever been to the Galapagos Islands, audiences in London, Beijing, Johannesburg and Sydney are able to easily acquire significant knowledge about the Galapagos iguana.

The concept of inscriptions can be seen to be very important for the formation of knowledge. The text by Latour discussed in this section was written in 1988 and it had a historical perspective in regards to inscriptions. Without straining the imagination too much, however; the thoughts of Latour concerning inscriptions can be seen to provide a strong argument for making use of the internet in the formation of new knowledge.

The preceding sections have discussed the theory of Latour of knowledge formation related to inscriptions. While the focus of Latour in 1988 was on the historical development within writing and imaging craftsmanship, this section will focus on the internet, which was developed in the years after Latour wrote his article. Compared with earlier tools, the internet offers a multitude of enhancements to the concepts of immutable mobiles and optical consistency. By digitalising inscriptions and making them available on the internet, several of their features are enhanced. The characteristic of mobility is enhanced to the extent that inscriptions are available for people all over the world instantly after being published. Once available on line, replication potential is virtually unlimited, only subject to the costs associated with server traffic. Immutability of inscriptions can curiously at the same time be increased and reduced. The same knowledge can be spread to a virtually unlimited number of people in different locations, enhancing immutability, but inscriptions may be altered after publication instantly changing the inscriptions available on line, which in a way makes them mutable for better or worse. Another form of mutability that is not specific to the internet is that inscriptions can be interpreted, as the following is an example of. As discussed by Rogers and Marres the statement by IPCC that “the balance of evidence suggests a discernable human influence on global climate” has been used in very different ways. Sometimes the statement was used as affirmation of anthropogenic climate change, while it was also used to emphasise scientific uncertainty (Rogers & Marres, 2000). Mutability is not necessarily a problem. Mutability or ‘fluidity’ may in some circumstances be an advantage in that it facilitates adaptation (De Laet & Mol, 2000). A way in which the mutability or ‘fluidity’ offered by the internet could be used as an advantage is that it enables several people in different locations to modify inscriptions within the same optically consistent space on line at the same time.

Latour has emphasised the significance for the construction of knowledge of being able to display inscriptions in an optically consistent space. He referred to the space offered by a flat paper surface, but an internet page offers several new opportunities. One of the most important features is that the inscriptions on an internet page are not fixed in the same way as they would be on paper. Elements can be interacted with, and moved around on the page itself. With movement comes also the ability to go beyond pictures on a paper surface and show video streams. Video includes the ability to show recorded video, but is also interesting because it can make use of computer generated imagery (CGI) to simulate 3D environments. 3D environments can also be simulated in real time on an internet page offering the ability to interact with these environments. As emphasised by Latour; the ability of images to merge with geometry is a powerful feature which can be incorporated in these 3D environments. Such 3D simulations may mimic objects in the real world in size and shape, but also when it comes to physics for example. More simple animations can also be made interactive and offer a powerful effect. Simple animations such as moving and interactive graphs and figures can enhance the surface of an internet page in ways that normal paper cannot match. In addition to being able to superimpose symbols and images on a surface in the way Latour outlines in his article of 1988, it is now possible to incorporate movement and to interact with elements on this surface.

Apart from new ways of constructing an optically consistent space, the opportunities for structuring an internet page are very different from a book for example. An internet page is usually not arranged in consecutive pages like a book is. Pages are connected by hyperlinks, which opens up for new ways of structuring information and for users to navigate.

An aspect of the internet that authors within Actor Network Theory (ANT), such as Latour and Marres find interesting is the way information is stored and the ease with which issues can be traced. Latour emphasises the obsession of ANT with informational traces, and that the internet offers previously unheard of possibilities when it comes to the traceability of social interaction. All types of information is collected and archived on the internet; from the circulation of rumours to scientific data and political resolutions (Marres, 2004). The medium appears as a vast archive containing inscriptions documenting a multitude of social interactions in which social and political life is made traceable (Marres, 2005). The internet can be regarded as a practically limitless storage space for issues-in-the-making (Marres, 2004). The internet pages of actors involved in the controversies on line tend to make available documents that play an important role in the dispute and that in part make up the controversy itself (Marres, 2005). The ongoing archiving of reports, drafts, surveys,

resolutions, letters and similar documents is a crucial way in which controversies are enacted on the internet (Marres, 2005). Marres also highlights the way in which the internet sites of actors involved in the controversy acknowledge and disclose other actors and the documents they have made available through the use of hyperlinks (Marres, 2005). The following section will examine attempts by Rogers and Marres to make use of the informational traces just discussed.

3.2. Mapping the Climate Change Controversy on the Internet

The internet is a medium that is steadily increasing in popularity. As an example; the daily internet usage in Norway increased from an average of 55 percent in 2005 to 60 percent in 2006 according to Statistics Norway³. This is a continuation of a longer trend in Norwegian internet usage, and it is reasonable to assume that the internet usage is increasing also in other parts of the world. In regards to the issue of anthropogenic climate change, it has been noted by Rogers and Marres that there is a lack of any kind of global structured debate on line. It is however; important to try to understand the current debate on the internet as the internet is gaining momentum as a source of information (Rogers & Marres, 2000). The work of Richard Rogers and Noortje Marres on debate mapping on the internet will be used to identify the actors involved in the debate and to see the contours of the debate. Rogers and Marres try to follow the issue of climate change on the internet much the same way as Latour has followed science and technology earlier. The internet contains vast amounts of information regarding climate change, to the extent that it may seem futile to try to make sense of it all. Rogers and Marres have noted that the vast quantities of results generated by search engines on the topic of climate change does not provide an overview of what could be called a structured global climate change debate. However; by using a method of tracing hyperlinks⁴ between websites involved in the debate, a map can be devised which identifies important actors. A map displaying the internet based climate change controversy as of 1998 can be seen in the appendix to this thesis. The actors are divided on the map into three groupings: governmental, non-governmental and corporate organisations. Examples of actors from the governmental organisations are the United Nations Framework Convention on Climate Change (UNFCCC), UNEP and IPCC; from the non-governmental organisations

³ Source: <http://www.ssb.no/vis/emner/07/02/30/medie/art-2007-03-29-01.html> Accessed 06/08/07

⁴ A central navigation element on the internet which, when clicked upon; brings the user directly to the internet location specified in the link. Source: http://en.citizendium.org/wiki/World_wide_web Accessed: 26/07/07

(NGO) are Friends of the Earth, World Wildlife Fund (WWF) and Greenpeace; and from the corporate organisations are Royal Dutch Shell, Ford Motor Company and ExxonMobil (Rogers & Marres, 2000). As the group termed 'governmental organisations' by Rogers and Marres mainly consists of intergovernmental bodies such as UNFCCC, UNEP and IPCC, I will from now on refer to them as intergovernmental organisations (IGO).

In addition to simply identifying the actors involved in the debate, the mapping technique of Rogers and Marres may provide useful information about the actors based on their linking patterns. The practice of providing hyperlinks to other actors is not a random process. Rogers and Marres see the act of providing a link as recognition of an actor as a partner or an opponent in a debate, while they see the act of not linking as a possible attempt to silence and exclude an actor from the debate. Distinct linking patterns were found between the three groups identified earlier. The group of NGOs was found to be active in linking to leading IGOs and also to other NGOs, while links to corporations were found to be relatively sparse. The group of IGOs was found to almost exclusively link to other IGOs. The group of corporate organisations was found to be conservative in their linking behaviour, rarely linking to other corporations, NGOs and IGOs. Shell can be seen as the exception linking actively to other corporations and to NGOs, but not one single link to the group of IGOs (Rogers & Marres, 2000). Another exception is the Global Climate Coalition (GCC) which links exclusively to IGOs. This organisation will be discussed later.

The map can be further enhanced by the reference to commonly acknowledged statements in the climate change debate. Rogers and Marres found frequent references on the websites of NGOs and corporations to a surprisingly small number of IPCC statements, which gives the impression that IPCC is the backbone of the debate. An IPCC statement discussed earlier that was found on the websites of leading NGOs and corporations was that "The balance of evidence suggests a discernible human influence on global climate". NGOs mainly introduced the statement as evidence of the human inducement of climate change. Together with the NGO tendency to link to IGOs, this use of the statement can be taken as support of IPCC. Corporations, conversely; tended to use the statement as an affirmation of scientific uncertainty. A statement taken from the websites of ExxonMobil can be seen as an example: "Despite the statement by the IPCC, it is premature to suggest that humans are now changing the climate", clearly highlighting the uncertainties (Rogers & Marres, 2000). Coupled with the tendency of corporate organisations of not providing a link to IGOs, this emphasis on uncertainties can be seen as an attempt to moderate the role of IGOs and

increase uncertainty around climate science. These are examples of how mapping of public controversies on line can be used in a meaningful way.

The mapping of the climate change controversy discussed in preceding sections is an attempt towards making use of the informational traces found on the internet in studying the controversy on line (Rogers & Marres, 2000). Rather than focusing on individual internet pages, the mapping by Rogers and Marres draws focus towards a network of internet pages that together constitute the controversy on line (Marres, 2005). The practice of tracing issues on the internet is, however; still in its early stages, and further research is required in order to gain new insights.

The prospects of increasing the traceability of issues and enhancements in creating optically consistent spaces suggests that the internet may be an important arena for creating new knowledge as Latour has discussed in regards to writing and imaging craftsmanship. Earlier sections have shown that democratisation of science is a long and central tradition within STS and that public participation may result in the creation of better and more widely accepted knowledge. Although arguments for both democratisation of science and the use of the internet have been found, little material has been found arguing explicitly for internet based democratisation. While not uncritically embracing the internet; this thesis has aimed to bring together material within STS in an attempt to argue for the use of the internet in regards to establishing some sort of structured democratic debate around the issue of climate change on line.

The following sections will examine central actors involved in the issue of anthropogenic climate change with respect to democratisation of science and the use of the internet. The United Nations organisations IPCC and UNEP will be the main focus, but also actors sceptical to the knowledge produced by IPCC will be examined. The aim is to analyse especially the United Nations organisations with respect to their current attitudes and actual practices in relation to the internet and the inclusion of the public in the issue of climate change. This analysis will be used later for examining the basis for possible future internet based democratisation of science in regards to the issue of climate change.

3.3. The Intergovernmental Panel on Climate Change (IPCC)

A number of actors have been identified and shown to be active in the debate around climate change on the internet. It has been shown that IPCC has an important role and can be considered to be a backbone to the debate, which should not be a finding that is too

surprising. The centrality of IPCC is the reason why I have chosen to study the organisation in more detail.

As IPCC is argued by Rogers and Marres to be the most authoritative and central actor in the climate change debate; it would be interesting from an STS-perspective to examine how this actor relates to public participation in the issue of climate change. As this thesis examines the possibilities of using the internet to enhance public participation, it would also be important to determine IPCC's actual use of the internet. This section will provide an introduction to IPCC relevant to this thesis. The way in which the organisation currently works in relation to climate change will be examined. The attitude of IPCC towards the inclusion of the public in the discussion around climate change will also be studied with an emphasis on the internet. This will be done by examining the overall communication strategies of IPCC with an emphasis on the treatment of the public as a target for outreach activities and the attitudes towards the internet as a medium.

3.3.1. Organisation

IPCC is an organisation that was established by UNEP and World Meteorological Organisation (WMO) to scientifically determine the anthropogenic influence on the global climate system. The role of IPCC as stated on their website is to “assess on a comprehensive, objective, open and transparent basis the best available scientific, technical and socio-economic information on climate change from around the world”⁵. The assessments are based on peer-reviewed material and draw on the work of hundreds of experts from all regions of the world. The organisation is open for all member countries of UNEP and WMO (IPCC, 2007a). Representatives from member countries gather approximately once a year in plenary sessions; which is where all major decisions in IPCC are made (IPCC, 2007b).

3.3.2. Assessment Reports

The scientific assessment of climate change is compiled in different reports; most notably in assessment reports that have been issued in approximate 4-year intervals. The decision to create assessment reports is made in plenary sessions as well as the final approval of the reports (IPCC, 2007c). The reports involve several hundred experts and are written by teams of authors which are nominated by governments and international organisations and selected

⁵ Source: www.ipcc.ch/about/faq/IPCC%20Introduction.pdf Accessed: 26/07/07

for a specific task according to their expertise (IPCC, 2007a). The assessment reports go through one expert review and one expert and governmental review before they are submitted for approval (IPCC, 2007b). As mentioned earlier; the publication of assessment reports requires approval from the government representatives involved in the plenary session of IPCC. Although the full assessment reports are important and provide the scientific background, the part of the report that has the highest impact and is read by the most people is the summary for policymakers⁶. This summary is subjected to a line-by-line approval to ensure that consistency between the underlying report and the summary is achieved (IPCC, 2007c). The following section will examine the strategies for communication and diffusion of the reports.

3.3.3. IPCC Outreach Activities

This section will examine the strategies of IPCC towards making an impact on society as a whole with emphasis on the strategies surrounding the fourth assessment report that will be finalised throughout 2007. The strategies referred to in this section are drawn from IPCC documents termed ‘Outreach’ that are openly available on-line. The Outreach documents deal with precisely; the communication strategies of IPCC. Worth noting is that IPCC has engaged an organisation called Communications & Network Consulting (CNC) to produce a communication strategy report in preparation for the release and dissemination of the fourth assessment report (IPCC, 2005). A main part of the strategy is increased and co-ordinated outreach activities, which include briefings, conferences, workshops and seminars targeting policymakers, scientists, industry, parliamentarians, IGOs and NGOs in respective order according to the priority assigned by IPCC (IPCC, 2005). Improved processes to ensure precise, balanced and timely production of materials based on the fourth assessment report is also part of the strategy. The media is not considered a target specifically for outreach activities, but a thorough media strategy is outlined. The main media strategy is to secure “powerful, accurate and sustained press coverage” (IPCC, 2005). The strategy includes a recommendation for media training for all representatives interacting with the media. Important is also the protection of the reputation of IPCC, its processes, scientists and reports. A media strategy is to ensure that journalists from the most influential outlets are very well briefed, so that the majority of coverage is drawn heavily from them. The broad objective of

⁶ Interview with Øyvind Christophersen, Norwegian delegation to IPCC

the communications strategy is to position IPCC as the “consensus of global scientific opinion based upon the highest quality scientific literature” (IPCC, 2005).

3.3.4. IPCC and Public Participation

The communication strategies of IPCC include an identification of actors that outreach activities are to be focused towards. Government and industry decision makers are identified as the main focus of IPCC outreach activities. Negotiations under UNFCCC and the Kyoto Protocol are also part of the target group⁷. Relations with the media is also emphasised as important. The strategy to reach other parts of civil society, mainly involves using indirect communication through the actors pointed out above. The document states explicitly that “Addressing the general public should not be the focus of IPCC information activities” (IPCC, 2006a). As an example; the United States position on the topic of addressing the public, is to advise the IPCC to exercise caution in developing a communication strategy of its own. The central purpose of IPCC is seen to be that of producing “authoritative reports on the state of climate science that are ultimately approved by governments that are members of the panel. Any outreach activity should support and not undermine the authority of the panel” (IPCC, 2006b). Popularisation of IPCC material is an example of an activity that is feared to undermine the authority of the organisation and the material produced. Popularisation would also be difficult due to the political processes that all material published by IPCC is subjected to in order to be approved⁸. The summary for policymakers mentioned earlier could be seen as a popularisation of the assessment reports and is a result of a tedious review and approval process culminating in a line-by-line approval in plenary sessions within IPCC. Further material to be subjected to the same line-by-line approval is simply not prioritised⁹. Popularisation is, however; done in co-operation with UNEP, which is an organisation that is not restricted by political processes to the same extent as IPCC¹⁰.

3.3.5. IPCC and the Internet

This section will examine the attitudes of IPCC towards the use of the internet. This will be done by conducting an analysis of the IPCC website and examining the communication

⁷ Interview with Øyvind Christophersen, Norwegian delegation to IPCC

⁸ Interview with Øyvind Christophersen, Norwegian delegation to IPCC

⁹ Interview with Øyvind Christophersen, Norwegian delegation to IPCC

¹⁰ Interview with Øyvind Christophersen, Norwegian delegation to IPCC

strategies of IPCC with respect to the internet. In analysing the website, I will make use of principles from Actor Network Theory (ANT). As explained earlier, I will try to ‘follow the surfers’ in order to see the page from the perspective of an internet user that is new to the issue of anthropogenic climate change. The point of departure will be an internet search as this is a common way of finding information on line. The simple exercise of doing an internet search through Google will be conducted to check the availability of the IPCC website, while the content and appearance of the website will be discussed subsequently. The general search terms ‘climate change’ and ‘global warming’ were used, surprisingly; yielding very different results. The search for ‘climate change’ produced a page of results placing the IPCC website at the bottom of the first page as number nine, while ‘global warming’ produced a list in which IPCC did not appear within the first 150 hits. This means, in effect; that the IPCC website can only be found using the term ‘climate change’. IPCC was in earlier sections found to be a central actor, if not ‘the’ central actor, in regards to climate change, and one may wonder why this actor does not rank higher than number nine in searches for the term ‘climate change’. It can be seen that little effort has been put into making the web pages of IPCC visible through general searches. The user has to know what he or she is looking for in other words. Even a user looking specifically for the IPCC website would be puzzled if assuming that the website is to be found at www.ipcc.org as this page redirects the user to a Canadian financial organisation¹¹. A search for the terms ‘IPCC’ or ‘Intergovernmental Panel on Climate Change’ will, however; yield search result placing the pages of IPCC located at www.ipcc.ch as number one. Regarding appearance; a user that manages to find the IPCC websites will be presented with a front page containing a significant amount of information and links that makes the whole page seem complex and difficult to navigate. The pages give a strong impression that little attention has been paid to design and user-friendliness. The content of the pages is, although difficult to navigate; irreproachable. Seemingly all relevant documents, both those published and those that are internal to IPCC are available on these pages. The websites of IPCC can be summed up as having poor availability and appearance while the content available is quite comprehensive.

IPCC is aware that their on-line presence has not reached its full potential, but it is not entirely clear what is to be done about this. Communications & Network Consulting has advised that the website could be usefully redesigned to make it more user-friendly (IPCC, 2005). Members of the panel are, however; undecided whether to fundamentally redesign the

¹¹ Source: www.ipcc.ca Accessed 13/08/07

IPCC website or to keep updating it in its current state (IPCC, 2006a). However; no mention is made of any more ambitious use of the internet than possibly making the internet page more user-friendly.

Having determined the attitudes of IPCC towards public participation and the internet, it is clear that the organisation does not prioritise either. The furthest IPCC goes in addressing the public is to disseminate their assessment reports indirectly through national governments, the media and other UN organisations (IPCC, 2006a). There is also, as mentioned; little indication that IPCC has any ambitious plans for the use of the internet. As IPCC relies on UNEP for addressing the public and popularising IPCC material, the next section will examine the attitudes of UNEP towards public participation and the internet. The findings in regards to IPCC make my thesis turn in a slightly different direction, but it can be seen as an affirmation that the UN system is quite complex.

3.4. United Nations Environmental Programme (UNEP)

This section will examine the way in which UNEP works in regards to climate change. The current workings of the organisation will be examined along with the attitude towards the public participation in science and towards use of the internet. Information from the UNEP website for climate change will also be studied.

3.4.1. Organisation

UNEP has the objective stated on their website to “provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations”¹². The organisation deals with a multitude of environmental issues and climate change is only one of them. The structure of UNEP is complex, and it is problematic to define exactly what parts of the organisation are involved with climate change. Four climate change centres are however; identified on the UNEP website for climate change: One in Norway, two in Denmark and one in the United Kingdom¹³. The centre identified in Norway is the one mentioned earlier; UNEP/GRID-Arendal.

¹² Source: www.unep.org/Documents/Multilingual/Default.asp?DocumentID=43 Accessed 18/06/07

¹³ Source: www.unep.org/themes/climatechange/Climate_Change_Centre/index.asp Accessed 18/06/07

3.4.2. UNEP Outreach

The ambitions of UNEP to reach, engage and influence the public in regards to climate change is based on the objectives of the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC was established in 1992 and seeks to address the issue of climate change. Article 6 of the convention is however; most relevant to this thesis. Article 6 stresses the need for education, training, public awareness, public access to information and public participation at regional, national and international levels in the context of climate change¹⁴.

Reference to activities corresponding to Article 6 can be found on the UNEP website under the Climate Change Outreach Programme. The objectives of the programme are to provide governments with additional tools for promoting climate change awareness at the national level and to address associations, NGOs, youth and the general public¹⁵. Concrete measures to address target audiences include workshops around Article 6, national climate campaigns, journalist seminars, creation of graphics and in general communicating IPCC material to a wider public. UNEP has been responsible for popularisation of IPCC material and although UNEP does make strong efforts to raise awareness around climate change, much more could be done¹⁶. UNEP is however; a relatively small organisation with quite limited resources¹⁷.

3.4.3. UNEP, the Public and the Internet

The preceding section has examined UNEP as an organisation, its objectives and actual measures taken towards public outreach. This section will examine the attitude of UNEP towards the public and the internet. In addressing the public; UNEP has already made strong efforts through outreach activities such as the ones discussed in the preceding section. As mentioned; UNEP has stated goals through United Nations Framework Convention on Climate Change (UNFCCC) to address a wider audience including the public. UNEP does recognise that there is unexploited potential latent in the internet¹⁸. UNEP has discussed with

¹⁴ Source: http://www.unfccc.int/essential_background/convention/background/items/1366.php Accessed 18/06/07

¹⁵ Source: <http://www.unep.org/themes/climatechange/About/index.asp> Accessed 18/06/07

¹⁶ Interview with Svein Tveitdal, Senior adviser UNEP/GRID-Arendal

¹⁷ Interview with Svein Tveitdal, Senior adviser UNEP/GRID-Arendal

¹⁸ Interview with Svein Tveitdal, Senior adviser UNEP/GRID-Arendal

the World Resources Institute, the possibilities of establishing a meaningful global debate, but without finding a solution¹⁹. An objective stated in UNFCCC Article 6 is that of engaging audiences on an international scale²⁰, a task for which the World Wide Web may be useful. UNEP seems to be positive towards the use of the internet for the purpose of establishing a meaningful debate²¹. The lack of a structured debate is, however, as noted by Rogers and Marres; blatantly evident on the internet (Rogers & Marres, 2000).

After analysing both IPCC and UNEP in terms of their attitudes towards including the public and using the internet, very different results can be summarised. IPCC does for several reasons not prioritise the public as a target group, or the internet as a medium. UNEP on the other hand; does address the public, although; more can be done. UNEP is also interested in using the internet as a medium for a structured debate involving the public, but does not have any solutions for facilitating such a debate. Nor do they have the resources. The divergence in attitudes towards public outreach of IPCC and UNEP correspond with findings by Rogers and Marres. IPCC was found to exclusively provide hyperlinks to other intergovernmental organisations (IGOs), completely refraining to link to NGOs or corporate organisations. However; IPCC received numerous incoming links. This can be seen as an indication that IPCC is a key player in the debate and that it has an attitude of self-sufficiency. IPCC not wanting to affiliate itself with organisations, especially NGOs, outside the group of IGOs can be seen as an indication of unwillingness to engage in public outreach. The two organisations UNFCCC and UNEP were found to be the only IGOs linking, yet quite sparsely; outside the group of IGOs – to NGOs. This linking can be understood by observing that these are the only IGOs in the sample that have policy plans of reaching and interacting with the public (Rogers & Marres, 2001).

3.5. Scepticism towards Anthropogenic Climate Change

While the UN based organisations have not taken public outreach to its limits, there are other groups that have seen the importance of targeting the public. Some of these organisations will be discussed in the following sections.

¹⁹ Interview with Svein Tveitdal, Senior adviser UNEP/GRID-Arendal

²⁰ Source: http://www.unfccc.int/essential_background/convention/background/items/1366.php Accessed 18/06/07

²¹ Interview with Svein Tveitdal, Senior adviser UNEP/GRID-Arendal

3.5.1. The Global Climate Coalition (GCC)

The Global Climate Coalition is an organisation that shows up in the hyperlink map of Rogers and Marres, but it is only briefly discussed. Although it brings the focus back into the history of climate change, it may be worth taking a more careful look at the organisation in order to understand its contribution to the issue of anthropogenic climate change. The GCC may be seen as the first organised response by the business community to climate change. The organisation was formed in 1990; only two years after Margaret Thatcher warning to the Royal Society, the testimony of James Hansen to the United States Congress and the establishment of the IPCC. It represented a number of multinational corporations (MNC) mainly based in the United States, but a few subsidiaries of European MNCs also joined. Members of GCC included among others; Ford Motor Company, General Motors, Royal Dutch Shell and ExxonMobil. Most of the members were in some way connected to the fossil fuels industry. The key strategy of the GCC was to publicly challenge the science of climate change, pointing to the lack of consensus among scientists and highlighting the uncertainties. Another strategy was to actively promote the views of scientists sceptical to the findings of IPCC. Strategies have also been to direct attention and focus towards the high costs of implementing policies to reduce emissions and the unfairness in the lack of commitment from developing countries. The organisation was used as an instrument to influence opinions in civil society on several levels (Levy & Egan, 2003). The communication strategies of GCC were not openly available like in the case of the United Nations organisations, but it is quite obvious that the importance of engaging the public was well understood.

3.5.2. The Cooler Heads Coalition

The Global Climate Coalition was disbanded once the Bush administration announced that the United States would not implement the Kyoto Protocol (Rondinelli, 2003). As the GCC does not exist any longer, it naturally; does not have a presence on the internet. The historical account of the GCC may, however; serve as an insight into how such an organisation operates. An organisation that can be argued to carry a resemblance to the GCC is the Cooler Heads Coalition. Where the GCC has been extensively referred to in peer reviewed journals as a lobby group associated with the fossil fuels industry the Cooler Heads Coalition is seldom mentioned. The Cooler Heads Coalition is interesting in that it uses the high profile internet domain www.globalwarming.org and positions itself in opposition to the findings of IPCC with the objective to show that ‘The risks of global warming are speculative; the risks

of global warming policies are all too real'²². It may not seem revolutionary to find a website that opposes the view of IPCC, but chances are that others have also found this page. A search for the term 'global warming' with any of the conventional and widespread internet search engines will rank this page in the top ten. A simple search in Google for 'global warming' will yield this page as number two, only surpassed by Wikipedia²³. It is reasonable to assume that it is quite common to query a search engine for the term 'global warming' in order to find information relating to this issue. Such a query will in this case yield information contradictory to that coming from IPCC.

There is as mentioned very little written around the Cooler Heads Coalition in peer reviewed literature. However; Guardian columnist David Adam has put this and other organisations to scrutiny. He has linked the Cooler Heads Coalition to another organisation called Competitive Enterprise Institute (CEI) which is also sceptical towards anthropogenic climate change. Adam has argued that the CEI has been receiving direct funding from fossil fuels MNC ExxonMobil (Adam, 8 December 2005). President of the Royal Society Sir Robert May spoke in 2005 of a "lobby of professional sceptics who opposed climate change" (Adam, 27 January 2005). Adam published in 2006 a letter by the Royal Society directed to the UK branch of ExxonMobil demanding that the MNC withdraws support for up to 39 groups that on their websites "misrepresented the science of climate change, by outright denial of the evidence that greenhouse gases are driving climate change, or by overstating the amount and significance of uncertainty in knowledge, or by conveying a misleading impression of the potential impacts of anthropogenic climate change" (Adam, 20 September 2006).

The intention of the preceding sections on the organisations involved in the climate change controversy has been to show that there are clearly powerful organisations taking stands in direct opposition to each other. The organisations discussed tend to give the impression that their claims are, like those of IPCC; supported by scientific evidence. The following sections will attempt to establish what scientific base organisations such as the Cooler Heads Coalition rest upon.

²² Source: <http://www.globalwarming.org/article.php?uid=562> Accessed 05/06/07

²³ An on-line encyclopaedia

3.5.3. The Absence of Anthropogenic Climate Change

As organisations such as the Global Climate Coalition and the Cooler Heads Coalition take stands in opposition to IPCC, one may expect that they have some sort of scientific work to back up their claims. The following sections will attempt to determine what scientific work supports the arguments of these sceptical organisations.

A documentary called “The Great Global Warming Swindle” was released by British Channel 4 in 2007 arguing vigorously against the findings of IPCC (UKC4, 2007). The documentary features a number of scientists sceptical to the IPCC claim that the increased global temperature has anthropogenic causes, presenting various alternative theories. Material from peer reviewed sources to back up the theories presented in the documentary or to refute IPCC claims are, however; difficult to procure. Apparently; the difficulties of finding supporting material does not only apply to the writer of this thesis. In an article in *Science* by Naomi Oreskes in 2004, a sample of 928 peer reviewed papers regarding climate change from the ISI database were analysed. Of all the papers, 75% either explicitly or implicitly accepted the view of IPCC and 25% of the papers did not take a position for or against. Not a single paper argued against the views of IPCC (Oreskes 2004). In plain words; the survey conducted found that the majority of papers in the sample supported the view of IPCC; the rest of the papers did not take a stand, while not a single paper took a stand against the IPCC view. There may of course be papers in the database that were not picked up in the sample or articles outside the ISI database that clearly argue against IPCC, but the results of the Oreskes study are quite striking.

3.5.4. Examples of Sceptical Experts

The magazine *Physics World* has interviewed one of the scientists featured in the documentary; climate scientist Richard Lindzen. He agrees with the IPCC findings that temperatures have increased and that concentrations of greenhouse gases in the atmosphere have increased, but he does not believe that the increase in greenhouse gases is the cause for increased temperatures. The basic argument of Lindzen is that “The most plausible null hypothesis for the variations in temperatures we have seen is that it is natural” and that there is no reason to look for an extraordinary explanation to the changes we see. He claims that the climate models used by IPCC are far too sensitive to changes in the concentration of atmospheric carbon dioxide and Lindzen himself estimates that earth will warm up by

perhaps just a few tenths of a degree over the next century. He argues that there is no need to take actions to limit the emissions of carbon dioxide (Cartlidge, 2007).

Another expert featured in the documentary, Nigel Calder, co-published a book in 2007 called “The Chilling Stars; A New Theory of Climate Change” along with Henrik Svensmark. The book presents the same argument that Calder introduces in “The Great Global Warming Swindle” documentary; that cosmic rays are responsible for climate change to such an extent that carbon dioxide has no significant role. The book also emphasises the uncertainty in contemporary climate models, claiming that they are too sensitive to variations in carbon dioxide much the same way that Lindzen argues (Svensmark & Calder, 2007). Research scientist at the Norwegian Institute of Meteorology, Rasmus Benestad, has reviewed “The Chilling Stars; A New Theory of Climate Change” for the magazine *Klima*. Benestad holds that the main argument of the book is too simple and not very convincing. He claims that the book ignores important aspects of the climate system and that it contains a number of erroneous inferences. Benestad does, however; emphasise that new ideas enrich the climate change debate and should be welcomed (Benestad, 2007).

David Demeritt discusses a claim by Fred Singer in an article of 1996 that the threat of climate change has been exaggerated by scientists “with a financial stake in adopting an alarmist attitude about global warming” (Demeritt 2001). Singer is also featured in “The Great Global Warming Swindle” documentary with a similar claim.

Another expert both discussed by Demeritt and featured in the documentary is Frederick Seitz who in a Wall Street Journal editorial, accused scientist involved in the IPCC of “major deception” and a “disturbing corruption of the peer review process”. Seitz has been a central figure in the conservative think-tank George C. Marshall Institute (Demeritt 2001). The George C. Marshall Institute is one of the 39 organisations highlighted by Adam as an organisation receiving funding from ExxonMobil (Adam, 27 January 2005).

The experts discussed in the preceding sections disagree in some way or another with the findings of IPCC. The concerns regarding the validity of IPCC findings may in some cases be genuine, but they may in other cases be part of a deliberate strategy of disinformation. A draft report of a proposal compiled by industry opponents of action regarding climate change was leaked to the press in 1998. Among the ideas in the proposal was a “campaign to recruit a cadre of scientists who share the industry’s views of climate science and to train them in public relations so they can help convince journalists, politicians and the public that the risk of global warming is too uncertain to justify. The plan was to raise questions about and undercut the prevailing scientific wisdom and was linked to oil

companies, conservative policy research organisations and trade associations (Boykoff & Boykoff 2004). It is important to acknowledge that inductive reasoning should not be used to infer from this one case, that scientists sceptical to IPCC findings are necessarily linked to oil companies and conservative policy organisations. It is necessary to remain open towards those scientists that may have genuine objections towards IPCC. It is, however; important to be aware that experts figuring publicly may be biased and have hidden agendas.

The preceding sections give the impression that there is general agreement within the scientific community that human activities are responsible for the majority of current climate change. There is, however; fragmented, but somewhat co-ordinated, scepticism towards the common belief. While the general agreement rests on elaborate scientific work as a foundation, the scepticism towards this agreement does not seem to have much hold in science. In other words; the debate over anthropogenic climate change seems to have settled within the scientific community.

3.5.5. Inherent Uncertainty of Science

In pointing to the uncertainty of scientific findings without having much evidence to refute these findings, the climate sceptics seem to be pointing towards the general inherent uncertainty of science. If this is the case; the climate sceptics have adopted an argument that is very powerful and difficult to refute. The argument is, however; well known within STS. It is actually a central tradition within STS advocated by among others, Bruno Latour. Latour has noticed the similarity of the arguments of climate sceptics to arguments found within STS (Latour, 2004). The following section will examine the arguments of experts sceptical to IPCC findings and improve the very same argument with the help of material from STS writers. It will be shown that STS writers may agree that science carries an inherent uncertainty or that scientific knowledge is socially contingent, but they will not agree that such insights automatically falsifies the scientific knowledge. Using STS material; it is possible to refute the argument presented by climate sceptics.

STS writers Brian Wynne and David Demeritt have emphasised uncertainties in the science of climate change that are remarkably similar to those pointed out by sceptics such as Calder and Lindzen. The uncertainty involved in computer simulations of the climate system has been a focus of attention from both STS scholars and climate sceptics. According to Wynne; uncertainty in climate models can be seen to derive from the exclusion and simplification of many factors that are known to be important, due to limited understanding

of an extremely complex climate system and constraints related to computing power. Further sources of uncertainty are that models need to be corrected during the process of making long term predictions and that some values need to be artificially suppressed in order to produce credible results. It is worth mentioning that the limitations of computer models have been vigorously debated within the scientific community (Wynne, 1996). In this sense; Wynne agrees with Calder and Lindzen. Nevertheless; Wynne would go further in claiming that science not only carries inherent uncertainties; that it also receives strong influence from politics (Wynne, 1996). Demeritt has also specifically studied the climate models and has found that there is a social negotiation process between science and policy together determining the knowledge around climate change – in other words; co-construction of knowledge (Demeritt, 2001). An insight that is shared by STS writers such as Demeritt and Wynne is that science and policy is closely entangled, and a clear distinction between the two may be problematic (Demeritt, 2001). Wynne’s analysis “suggests how at the same time as global climate knowledge is being built, a ‘natural’ global policy culture is being built by reference to that knowledge – and vice-versa, that this emergent global policy culture acts as a context of validation for the scientific knowledge” (Wynne,1996).

Wynne does realise, however; that his deconstruction of the science may play into the hands of unwelcome political forces (Wynne, 1996). This deconstruction of a crucial climate change science may to Calder and Lindzen imply that the science can not be relied upon. According to Wynne; the recognition of the constructed nature of scientific knowledge does, however; not automatically falsify the knowledge produced (Wynne, 1996). The scientific knowledge accumulated at a given time is quite simply the best we can do for the moment (Demeritt, 2001). This thesis suggests that the inherent uncertainty and constructed nature of science should not be hidden, and that science should be presented more conditionally as Demeritt suggests (Demeritt, 2001). The public could, by being included in matters of science, be brought to understand and accept the uncertainties involved in the issue of climate change and trust the science produced as currently the best available knowledge. Such public understanding of the science of climate change would leave little room for the arguments of sceptics towards the uncertainty of science.

3.6. Science in Public

Preceding sections have suggested that IPCC may hold more support in the scientific community than the sceptics do. Coherent theories for refuting the knowledge produced by

IPCC are difficult to find, and sceptics have mainly resorted to emphasising the uncertainty in the science. The argument that science carries an inherent uncertainty may be effective, but it is not enough to falsify the knowledge produced as pointed out by Wynne. Although IPCC may stand strong within the scientific community, the knowledge produced by IPCC does not necessarily transfer to other parts of society.

3.6.1. Media

According to Dorothy Nelkin, the mass media is where the general public acquires most of its knowledge about science and technology (Nelkin, 1995).

Given the importance of the media suggested by Nelkin, this section will examine how actors in the debate around anthropogenic climate change have been treated in the mass media. Jules Boykoff²⁴ and Maxwell Boykoff²⁵ claim in a 2004 study that they have discovered a weakness inherent in the journalistic norm of balanced reporting. The norm is intended to secure fairness in reporting offering a voice to both sides of a controversy; however, the authors claim that this norm has been a problem in regards to climate change. Boykoff and Boykoff question whether the arguments of the climate sceptics carry equal weight to the scientific findings of IPCC, but they have observed a tendency in the media of balancing the coverage assigning approximately equal weight to IPCC and the sceptics. An empirical study of the United States prestige press in the period 1988-2002 was conducted analysing articles regarding climate change. The articles were divided into four categories, as following, depending on their focus: 5.9 percent - exclusive coverage of anthropogenic climate change; 6.2 percent – scepticism of anthropogenic contribution dominant; 36.3 percent – anthropogenic contribution dominant; 52.6 percent – balanced accounts. Given the lack of scientific basis suggested by Oreskes for the arguments of climate sceptics, the study of Boykoff and Boykoff shows that this group may have had their voices amplified beyond reason (Boykoff & Boykoff, 2004).

Although the IPCC does not prioritise addressing the public directly, they do address the public through other channels, such as the media. However, the study by Boykoff and Boykoff suggests that the media may not be a perfectly reliable carrier of scientific knowledge. The study was, however, based on historical material and does not include press coverage after the year 2002. As shown earlier in this chapter, the IPCC has adopted a media

²⁴ Professor at Pacific University, Department of Politics and Government

²⁵ Research Fellow at Oxford University, Environmental Change Institute

strategy after seeking advice from Communications & Network Consulting, which may have an effect on how the media represents IPCC material. The study may suggest that sceptics have used the media more skilfully to reach the public than the IPCC has done.

3.6.2. Internet

As mentioned earlier; Dorothy Nelkin wrote in 1995 that the public garners most of its knowledge about science and technology through the mass media. This may still be true, but the years following 1995 saw the advent of the internet, which has altered significantly the access to information. In addition to acquiring knowledge about science and technology through the media, it is safe to assume that an internet search is quite common. It has already been shown that IPCC does not prioritise use of the internet. The following section will compare the United Nations organisation that does prioritise using the internet, namely UNEP; with the Cooler Heads Coalition which is in opposition to IPCC. I will, like before; conduct the very simple exercise of doing an internet search through Google and examine the results with respect to availability, content and design. Again; the idea will be to ‘follow the surfers’ and see the pages in question from the perspective of an internet user that is new to the controversy.

First of all; it is important to note that the two terms “climate change” and “global warming”, like before; yield very different results. An earlier section in this chapter discussed the search for the term “global warming” in which the Cooler Heads Coalition appears as number two after Wikipedia. The UNEP page on climate change was not located within the first 150 results. However; UNEP does appear using the term “climate change”, but not higher than number seven; two places above IPCC. The Cooler Heads Coalition, interestingly enough; does not appear in a search for ‘climate change’. Both organisations, for some reason, trust that a random person searching the internet uses the ‘right’ terminology. The analysis of IPCC earlier in this chapter showed that the organisation was only possible to find using the term ‘climate change’: the same as UNEP. One may wonder why the UN organisations have decided not to use the term ‘global warming’. The UN organisations and the Cooler Heads Coalition rule themselves out of searches that use “global warming” rather than “climate change” or vice versa. Nevertheless; the Cooler Heads Coalition, with its scepticism towards IPCC, is more easily available than the climate change page of UNEP. As a digression; it is fascinating to see that the main UNEP website does not even provide a link

to the climate change section on its own pages. This finding in combination with the poor visibility in internet searches suggests that UNEP has a problem with availability.

The following part will compare the content of the UNEP²⁶ and the Cooler Heads Coalition²⁷ websites. A person that enters the website of the Cooler Heads Coalition is presented with recent news regarding global warming. Links are provided, most notably; to an introduction of the Kyoto Protocol, the effects of the Kyoto Protocol on different groups in society, resources regarding climate change and a section for students. It is easy to find relevant information regarding the issue of climate change. A person that enters the UNEP site for climate change is presented with a very brief introduction to climate change and the key roles of UNEP. Links are provided to different areas of the site, but it is not clear where to go for general information about climate change. Rather than providing clear and easy-to-access information about the issue of climate change, the site seems more geared towards explaining the role and importance of UNEP. Much of the content focuses on what UNEP does to tackle climate change, rather than providing information relevant to the issue itself. The website of the Cooler Heads Coalition is easier to navigate, and it is easier to find relevant and useful information. Given the findings earlier in this chapter, the information found on the Cooler Heads Coalition website is not based on science in the same way as that of UNEP, but it conveys the material in a more convincing manner. Both websites are fairly easy to navigate and it is evident that some effort has been put into design; maybe more so for the Cooler Heads Coalition.

To sum up this comparison of websites; the Cooler Heads Coalition website is easier to find through an internet search and the content is more targeted and relevant than that of UNEP. Naturally; no conclusions can be drawn from this comparison, but it may generate a few thoughts. In this small case; those sceptical to the findings of IPCC have been more skilful in using the internet for reaching the public. If this is the only case, it may not be such an important finding. However; if this is not the only case, it may have an impact.

3.6.3. Artificial Debate

The arguments used in the media and on the internet by those sceptical to the findings of IPCC tend to resemble the arguments put forth by the sceptical experts discussed earlier in the chapter, which again resemble the arguments of STS writers such as Demeritt and

²⁶ Source: www.unep.org/themes/climatechange/ Accessed 22/06/07

²⁷ Source: www.globalwarming.org Accessed 22/06/07

Wynne. Bruno Latour has also registered that arguments consistent with social construction of science from within STS are currently used to destroy strong and important evidence in order to artificially maintain a controversy and keep it from settling (Latour, 2004). A survey conducted by the UK research organisation Ipsos MORI in 2007 shows the effects of this artificially sustained controversy. The survey reports that 56% of UK respondents think that “many leading experts still question if human activity is contributing to climate change”²⁸. It may seem like those sceptical to the findings of IPCC have managed through skilful use of the media and the internet, to create the impression of uncertainty, ambiguity and sustained controversy.

3.6.4. Two Versions of Anthropogenic Climate Change

It can be seen in preceding sections that there are two versions of the anthropogenic climate change issue circulating in civil society and especially on the internet. These versions are present at different places in different forms. One version of anthropogenic climate change is presented by IPCC and supporting actors and is mainly visible in peer reviewed material and expert dominated environments, while it does not have a proportionately strong presence on the internet. The second version is virtually invisible in peer reviewed material and in expert dominated environments, while it has a disproportionately strong presence on-line and also in the public as shown by the Ipsos MORI survey discussed earlier. It may seem like those sceptical to the findings of IPCC has been better at generating publicity and including the public. As discussed earlier, IPCC is the backbone of the anthropogenic climate change debate and has a strong foundation in science, but the knowledge produced by IPCC has not been communicated properly to the public. This may not be too surprising given the communication strategy of IPCC which states that “addressing the public should not be a focus of IPCC information activities” (IPCC, 2006a). The two versions of anthropogenic climate change may be part of the explanation for the results in the Ipsos MORI survey, but there may also be deeper reasons. The following section will discuss the relationship between the scientific community and the public.

²⁸ Source: www.ipsos-mori.com/polls/2007/climatechange.shtml Accessed 11/07/07

3.6.5. The Scientific Community and the Public

Brian Wynne has written about the relationship between the scientific community and the public, as discussed in the literature chapter. He suggests that the scientific community inadvertently distances itself from the public. By constructing the public as ignorant and not involving it in matters of science, the scientific community facilitates ambivalence and alienation (Wynne, 1995). The distancing from the public by the scientific community is, in the case of climate change, even stated in clear text. As discussed earlier; the IPCC has stated that addressing the public should not be a priority. It would be fair to assume that the void created between the scientific community and the public plays a role in the inconsistency between the two suggested by the Ipsos MORI survey in the previous paragraph. The logical remedy for the discrepancy found in the Ipsos MORI survey of bringing science and the public closer has been discussed by several STS writers, Wynne being one of them (Wynne, 1995). Bringing the scientific community and the public closer can be done by including the public in matters of science. Although it is suggested within STS to bring the scientific community and the public closer through democratising science, IPCC does not seem to focus on the inclusion of the public.

3.6.6. IPCC vs. STS

In terms of democratisation of science, IPCC and STS can be seen to form two contrasting views. IPCC has explicitly distanced itself from the public with the intention of remaining an authoritative provider of information, while STS stresses that the public should be involved in matters of science. One may, however; ask whether democratisation of science is necessary. Although STS tends to emphasise the need for public participation, the strategies of IPCC seems to have worked without even addressing the public directly. A remarkable increase in awareness and commotion around climate change can be seen in civil society since late 2006²⁹. Although IPCC may not be credited for the full increase in awareness it seems like something is being done right, but it most definitively does not include public participation facilitated by IPCC.

Demeritt has suggested that IPCC has combined science and politics in an effective way. Rather than sticking strictly to matters of fact, IPCC has deliberately bonded together science and politics (Demeritt, 2006). An example of this mix of science and politics can be

²⁹ Interview with Svein Tveitdal, Senior adviser UNEP/GRID-Arendal

seen in my discussion of the IPCC assessment reports where I have shown that numerous scientists contribute to a report that in the end has to be sanctioned in plenary sessions involving delegates from the different nations involved in IPCC. Especially the summary for policymakers can be seen to be a product of both science and politics as it involves a line by line approval by country delegates. Wynne speaks of a negotiation of 'facts' in order to in the best way suit policymakers and influence policy (Wynne, 1996). Again; such blending of politics and science can be seen as a reaffirmation of how fitting the metaphor 'seamless web' is in describing the relationship between science and other parts of society. Demeritt discusses how "a socially contingent form of scientific knowledge is being shaped by an emergent international policy regime that, in turn, is being constructed and legitimated by this same body of scientific knowledge" (Demeritt, 2001). Demeritt shows how science and policy has been mutually constructed in an effective manner (Demeritt, 2001). Although the strategy of combining science and policy may be shown to be effective and also show how IPCC has managed to get by without the public, it does not directly explain why the public is excluded. In principle; the strategy of blending science and policy should not by necessity rule out democratisation of science. There must be a different reason for the hesitance of IPCC to include the public.

Wynne has discussed a deep insecurity within the scientific community towards encountering the public on their grounds (Wynne, 1995). He has noted that IPCC is perceived as an authoritative provider of scientific knowledge (Wynne, 1996), which is also the way the organisation sees itself (IPCC, 2006b). This is where a divergence between IPCC and STS can be seen clearly. The concept of an authoritarian provider of knowledge is part of a view that science is an upstream activity that provides 'facts' to a downstream society (Demeritt, 2001). Such a view of science does not correspond with the preceding section where it is shown that science and policy is mutually constructed. IPCC seems to be comfortable with combining science and politics, but they are not good at including the public.

A problem seems to be that democratisation of science would require IPCC to open up and be exposed to the public, which may be difficult to combine with the current authoritative position of IPCC. Rather than presenting science in an authoritative way, like IPCC currently does, Demeritt suggests that scientific knowledge should be presented more conditionally. As Demeritt puts it: "Science does not offer the final word, and its public authority should not be based on the myth that it does, because such an understanding of science ignores the ongoing process of organised scepticism that is, in fact, the secret of its epistemic success" (Demeritt, 2001). Scientific knowledge should instead be presented more

conditionally as the best we can do for the moment (Demeritt, 2001). A more conditional representation of science would be less authoritative, but it could generate trust in the social processes through which facts are scientifically determined and provide an answer to the climate sceptics and their attempts to refute climate change as merely a social construction (Demeritt, 2001). Although democratisation of science and a more conditional representation of science may be sensible from the perspective of STS, it may not be so clear from the perspective of IPCC. Democratisation of science would require IPCC to sacrifice some of its authority and represent science more conditionally. However; a discussion over whether IPCC would be willing to take such a step would be of a hypothetical nature and will not be initiated here. There are, nevertheless; clear indications in my analysis of IPCC that the organisation is currently not attuned to the inclusion of the public or the conditional representation of science. It was found in clear text that “addressing the general public should not be the focus of IPCC information activities” (IPCC, 2006a) and that “any outreach activity should support and not undermine the authority of the panel” (IPCC, 2006b). As shown in preceding sections; IPCC has been able to get by without the public through the mutual construction of science and policy. An interesting question to ask is whether it is wise to attempt to resolve the issue of climate change without the public.

3.6.7. UNEP and Democratisation of Science

I argue in this thesis that it will be easier to resolve the issue of climate change with the backing of the broader public. The thesis further argues that democratisation of science would be helpful in raising levels of knowledge and awareness. While it can be seen that IPCC is not geared towards the inclusion of the public in matters of science, UNEP is an organisation that has committed itself under UNFCCC Article 6 to involve the public on a regional and international level around the issue of climate change explicitly mentioning public participation³⁰. This thesis sees UNEP as an organisation that could facilitate democratisation of science. In arguing for democratisation of science, this thesis argues strongly for the inclusion of the public to a wider extent than is currently common. It is worth noting that this thesis does not argue for a system of democratised science that is radically different from the current system to be conceived and implemented. I see any movement towards the inclusion

³⁰ Source: http://unfccc.int/essential_background/convention/background/items/1366.php
 Accessed 18/06/07

of the public as a step in the right direction implying that a careful and gradual democratisation of science is preferable.

In arguing for UNEP to facilitate ‘democratisation’ of science a small, but important step would be to make relevant and useful information easily available for the general public. I also argue for involving the public in the debate around the issue of climate change in some way. The public should be allowed to discuss the normative question of ‘how do we want to live’ as Beck suggests, based on the best available knowledge. The possibility of involving lay-experts in checking laboratory results also seems promising, given that appropriate solutions for such involvement are found. I am less sure how to include climate change sceptics in the debate and how this could be done. Those sceptical to the findings of IPCC include both actors with vested interests and actors with genuine concerns. However; being open to dissenting voices is a part of democracy, an idea which brings me to the next point. Movements towards more formal democracy in science is an interesting idea, but appropriate solutions for such democratisation do not exist at this point in time. Until appropriate solutions for further democratisation are developed; this thesis argues for more careful democratisation of the climate change issue as discussed earlier.

Democratising science and allowing the public to participate in the construction of knowledge may have several advantages. Better public understanding of science may be achieved, but also vice versa; a better understanding of the public by the scientific community (Wynne, 1995). Public participation in science may, as discussed earlier, offer science an enhancement, for example through the public checking of laboratory results as suggested by Beck (Beck, 1992). Callon has suggested, drawing on Lippmann, that the initial ignorance of the public can be used as a strength, enabling it to explore new paths and develop original and new competencies (Callon, 2005). Democratisation of science could lead to better communication and generate trust between the public and the scientific community. It could also yield an acceptance of scientific uncertainty and ambiguity in society (Wynne, 1995). If IPCC had at the same time sacrificed some of its authority and acknowledged the uncertainty inherent in science publicly, there would be less room for the argument of the sceptics. With a closer relationship and better direct communication between the scientific community and the public, a discrepancy such as the one found in the Ipsos MORI survey³¹ discussed earlier in the chapter would be hard to come by. These points have

³¹ Source: www.ipsos-mori.com/polls/2007/climatechange.shtml Accessed 11/07/07

in common that they would contribute towards making the knowledge produced more credible and accepted in the public.

3.6.8. Is Knowledge Enough?

The previous section has suggested that democratisation of science could raise levels of knowledge and awareness in the public, while contributing to the construction of more credible and accepted knowledge. An interesting question to ask is, however; whether raising knowledge will make people act differently. While a lack of knowledge may not necessarily be the problem; indifference could play a role³². The question of whether knowledge leads to action has been asked before; maybe most famously by Socrates and Aristotle. Knut Åmås has discussed the two philosophers in relation to climate change in his article in *Aftenposten* of 2007. Socrates held that a person that knows what is right will do what is right. He linked knowledge directly with action. Åmås does not, however; see a lack of knowledge; but a lack of action. Aristotle was of a different opinion than Socrates, holding that knowledge is not enough. He held that people have weak minds and bad habits, preventing them from necessarily doing what is right, although; they may know what the right action is. One may wonder, if not knowledge; what can stimulate the right action? Aristotle suggested good role models (Åmås, 2 June 2007). In other words; politicians, experts and other public figures are needed to lead the way.

A problem with the role models, however; is that they, like the public, are only humans. They may also, to put it in the terms of Aristotle, have weak minds and bad habits. In the context of climate change, a politician for example, may have to make unpopular decisions in order to lead the way. Unpopular moves by politicians in our current system tend to be followed by a fall in ratings endangering the re-election of that very politician. Such a 'by-product' may cause politicians to be hesitant in making decisions that are not popular with the public. It seems like role models are not enough in their own right either. The point of Aristotle was that neither knowledge nor good role models are enough by themselves, but that an interaction between the two is necessary to facilitate action. There is a need both for knowledge and for someone to lead the way in regards to the issue of climate change in order to resolve the problem.

It has been suggested that UNEP, through democratisation of science, can facilitate increased knowledge in the public and the creation of more credible knowledge. It has also

³² Interview with Svein Tveitdal, Senior adviser UNEP/GRID-Arendal

been established that knowledge is not necessarily enough to resolve the issue of climate change, and that there is a need for role models to lead the way. Having relied on Actor Network Theory (ANT) throughout this thesis, I find it appropriate to question whether such role model necessarily has to be human. I find little reason why an organisation such as UNEP should not, in addition to facilitating the diffusion and creation of knowledge; provide guidance and lead the way in the issue of climate change. This is, of course, given that the organisation receives the resources necessary – which is not currently the case.

3.6.9. UNEP and Internet Based Democratisation

It has already been mentioned that UNEP has stated objectives of involving the public on a regional and international level around the issue of climate change. Suggestions for a careful and gradual democratisation has already been discussed, ranging from making information easily available, through public checking of laboratory results, to a democratised debate around the issue of climate change. As stressed by Tveitdal in his interview, UNEP could do more to include the public and is searching for ways in which public outreach could be conducted more effectively. Seeing that global warming is an issue that affects the whole planet, would it not be sensible to make use of the World Wide Web?

While not uncritically and over-enthusiastically embracing the internet as an arena for democratised debate, this thesis argues for a careful and gradual internet based democratisation of the issue of climate change on line. As discussed earlier, a first step would be to make all relevant information regarding the issue of climate change easily available on line. Further democratisation such as public checking of laboratory results and public structured debates around the issue of climate change could also be done on the internet. The point is that there should be a strong actor present on line to facilitate the creation and diffusion of knowledge, and at the same time lead the way towards resolving the issue of climate change.

4. Conclusion

This thesis set out to examine the prospects of internet based democratisation with respect to the issue of climate change. The background for this quest was the observation that no structured debate meets a public that turns to the internet in its search for knowledge around the issue of climate change. I wanted to examine whether the internet as a technology can be suited to stimulate public understanding, involvement and knowledge around climate change. This thesis fits into a longer tradition within STS arguing for democratisation of science and contributes to a more recent movement within Actor Network Theory (ANT) towards the enactment and study of public issues and controversies on the internet.

It has been shown through the use of STS literature that there may be benefits associated with the inclusion of the public in the issue of climate change and that the internet can be seen to open up certain opportunities for the enactment as well as the study of public controversies. It is however; made clear in the STS literature that the internet is not embraced uncritically. While being critical towards excessive or irresponsible use of the internet, it should be possible to advocate cautious use of the medium in regards to democratisation of the issue of climate change

After analysing the United Nations organisations IPCC and UNEP, it is clear that neither the inclusion of the public, nor the use of the internet is taken anywhere near its full potential. IPCC does not consider the public an audience to be addressed directly and does not have any ambitions of using the internet apart from possibly upgrading their website. UNEP, on the contrary; has stated objectives of reaching and including the public in the climate change debate. UNEP also recognises that there is latent potential in the internet. Of the two United Nations organisations, UNEP is the only one that seems at all interested in internet based democratisation of the climate change debate. However; after analysing the actual presence of UNEP on the internet, it seems like little effort has been put into even addressing the public on the internet in regards to the issue of climate change.

The Cooler Heads Coalition, an organisation in direct opposition to IPCC and that does not seem to base itself on peer reviewed material, is found to have a stronger presence on line when compared with UNEP – the United Nations organisation that actually has ambitions to reach and engage the public. It is puzzling to observe that the United Nations organisations, which can be considered central actors to the issue of climate change; are not

at all central on the internet – on the contrary; they seem to be quite insignificant. The lack of a public structured debate around the issue of climate change on the internet discussed earlier may not be so surprising given the ‘absence’ of central actors on line.

This thesis suggests that the United Nations organisations claim centre stage on the internet as they do in other parts of society. As mentioned earlier; IPCC does not prioritise addressing the public or using the internet. Although IPCC has not addressed the public directly or used the internet extensively, IPCC has achieved significant progress in regards to the issue of climate change. However; to acknowledge that IPCC has achieved progress does not necessarily imply that it is sensible to disregard addressing the public and making use of the internet. This thesis suggests that addressing and involving the public using the internet could benefit IPCC, while not insisting that IPCC is necessarily the right organisation to do so.

UNEP is an organisation that IPCC already relies on for spreading information in regards to the issue of climate change and that has stated objectives of reaching and involving the public. This thesis suggests that UNEP initiates a careful and gradual internet based democratisation in regards to the issue of climate change. A simple but crucial step towards democratising the climate change debate on line would be to make relevant information, including scientific material, available and easily accessible to the public. It is also suggested that UNEP should establish a debate on line in which the public is allowed to participate in normative discussions over the issue of climate change, although solutions for such participation will have to be found. Also the idea of public participation in the science of climate change where the public is charged with checking laboratory results is interesting but lack practical solutions. Without over-enthusiastically embracing the internet as a medium for democratic debate, this thesis suggests that careful and gradual internet based democratisation in regards to the issue of climate change can be initiated and that UNEP may be an organisation that can lead the way.

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Appendix

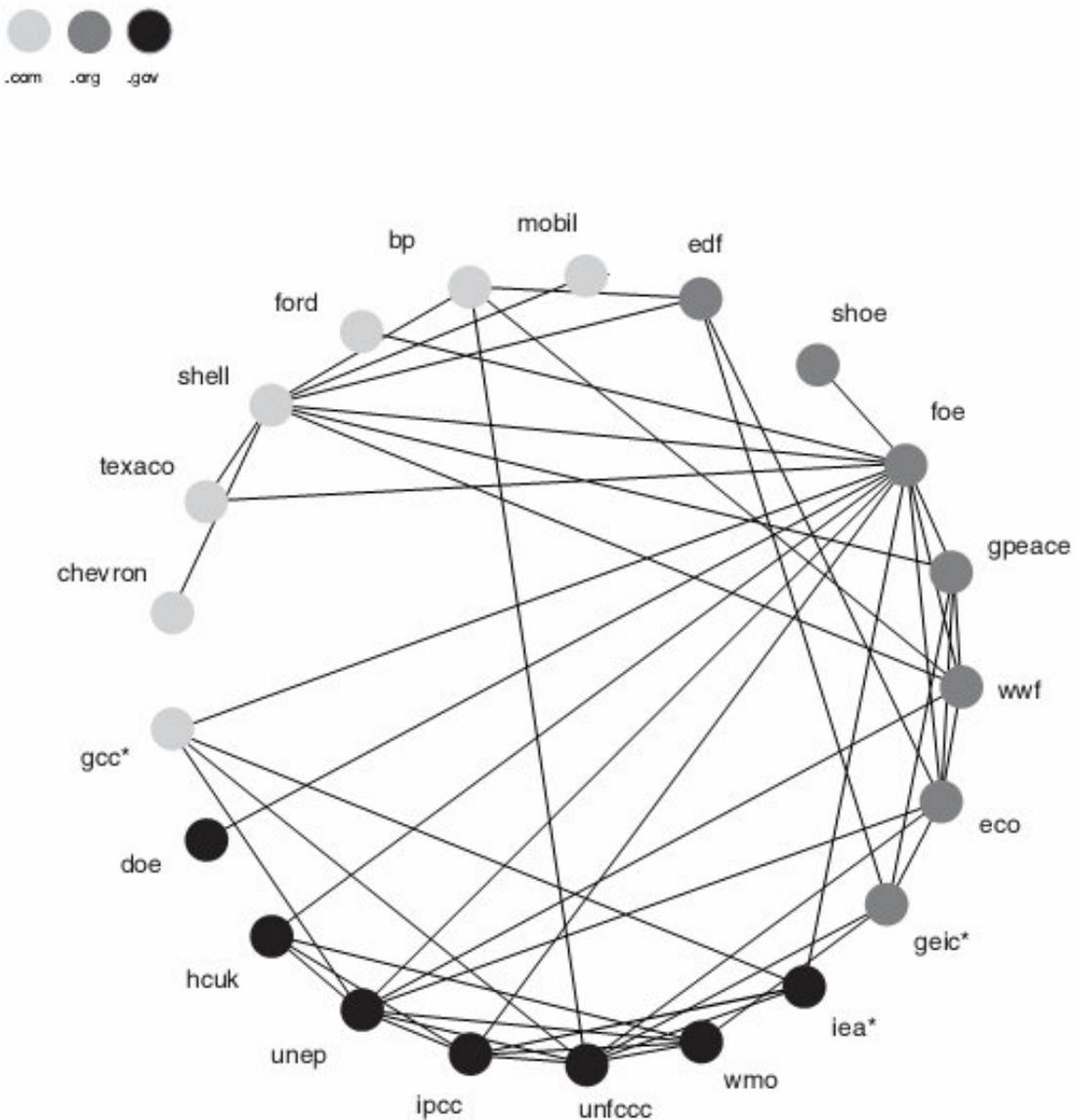


Figure 1. *Hyperlink Mother map.* Sample of the actors in the climate change debate on the web in November 1998, without direction of hyperlinking.

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