# The barriers to climate awareness

## A report on the ethics of sustainability

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# Preface

**The climate and personal responsibility**

We hear in the media about floods, storms and water shortages in other parts of the world. But here at home? Well, it certainly blows a blustery storm in the autumn, and we've had our fair share of wet winters, admittedly. But has the weather not always been unsettled in Denmark, so the thought goes. Can it really be a reflection of the fact that we humans are radically altering the climate?

That's the challenge in a nutshell. For anyone who has not had their basement flooded, we Danes will initially encounter climate change as higher insurance premiums and more expensive food in the supermarket. Or as professor of geology Minik Rosing once formulated it: Most Danes will encounter climate change in the shape of a window envelope.

We also will see and notice the changes in our surroundings, but they will be 'invisible' and 'imperceptible', in the sense that it will be hard to see the connection between individual events and the complex mechanisms underlying them.

Can't we just take it easy a bit? "Cool it", as Bjørn Lomborg preaches in his carefree manner. Other people despair, asking: What on earth can I do in the face of all this? But neither casual fatalism nor paralysis is the solution, because both act as a block to action.

I'm a politician, not a scientist. But the science is clear-cut: There is a problem, a very big problem even. And we humans have created it. That's why we also have a responsibility to act, not least for the sake of our children and grandchildren, who will be effected far harder than ourselves.

So can't the politicians just fix things? No. Of course, the politicians must take the lead and make all the grand gestures. But it would all end in a nightmare of micromanagement and tyrannical bans if we had to cope single-handedly from the front benches of Christiansborg, the EU and the UN.

The challenge posed by climate change is so great that all parts of society will have to do their bit–politicians, companies and, above all, each individual citizen. And people actually want to do the right thing if they know what the right thing is, and are not paralyzed by fear or delude themselves and others into thinking that we can just let things take their own course and run that risk on behalf of future generations.

In this report, Peter Kemp and Lisbeth Witthøfft Nielsen highlight some of the physical and psychological barriers deterring the individual from acting. It is a sober, thought-provoking and important contribution to the debate, for the more we know about the barriers, including those within ourselves, the better we can relate to them. And acknowledgement is the first prerequisite to action, so that each of us individually delivers on our personal responsibility in relation to climate change.

*Connie Hedegaard*

# Introduction

Throughout his entire life the Danish philosopher Søren Kierkegaard was preoccupied with how to convince someone of something so that it is not perceived by the one he wishes to convince as an encroachment, but as an aid to a better understanding of life and existence. Of this "art of helping", he wrote:

"If one is truly to succeed in leading a person to a specific place, one must first and foremost take care to find him where he is, and begin there".[1]

Today, 160 years later, this consideration is highly relevant, as people are being confronted with complex global problems, not least the global climate problem of how to assure ourselves a world without an inferior climate, for ourselves and our posterity far into the future.

An ever growing part of the world's population perceive such climate changes as a threat to their living conditions, and the question is how to persuade "the individual" so that he or she can do something to reduce this threat.

In order to help people translate what one may call their "climate awareness" into proactiveness, it will not suffice to give them knowledge of the "true state" of the climate or tell them how society attends to the problem. Instead, the individual must be found where he or she is, "and begin there".

It is not just a matter of supplying more knowledge and tenable theory, but above all of having to study what makes it difficult for each individual, each single family, workplace and company to translate their awareness that something needs to be done into actually doing something.

The problem today is not that there is lack of knowledge or good advice[2] but, on the contrary, the awareness barriers to environmentally accountable action are piling up for the individual. The fact of the matter is that the Apostle Paul's famous maxim: "for the good that I would, I do not: but the evil which I would not, that I do", has become true at a level we have not previously envisaged. The environmental awareness we have, we do not reflect in our actions, and the environmentally harmful actions we would not, those we do.

Currently, there are predominantly two forms of research into the influence of climate change on people and society: Investigations into environmental and climatic awareness among populations; and, research into people's and

society's vulnerability to climate change, and the extent to which adaptation is possible.

The first type is seen, for example, in a study on "the attitudinal prerequisites for the popular movement of the climate cause". This was presented on 29 March 2007 by the independent think-tank *Mandag Morgen [Monday Morning]**. It showed that just 1 out of 10 Danes thinks climate change is not yet a reality (as opposed to 2 out of 10 in 2003), and that 4 out of 5 think climate change is primarily man-made. But the study also showed that many Danes feel they have too slight a knowledge of what they can do to reduce emissions of greenhouse gases. Furthermore, it emerged that very few Danes realize how much carbon dioxide they themselves emit, and that Denmark is one of the countries with the highest carbon dioxide emissions (12.1 tonnes per person in 2005).

The problem with a study of this kind is that increased knowledge of the seriousness of the situation is not sufficient, but on the contrary can increase passivity, because the task can appear far too great for the individual. Paradoxically, it does not necessarily help that the government and the parliament are spearheading collective climate initiatives. In fact, this can have the diametrically opposite effect and increase the individual citizen's passivity in matters of the environment and climate, as people resign themselves to the fact that society's leaders are now taking action in these areas.

We shall not elucidate this problem here but confine our focus to the pertinent physical and mental barriers to climate awareness, not the barriers to the individual putting it into practice.

The other form of research focuses on the vulnerability of people and society to environmental and particularly climate change and examines the extent to which adaptation to such change is possible. It was the topic of the conference in London: *Living with Climate Change: Are there limits to adaptation?* (7-8 February 2008). Some of the contributions to this conference dealt with cultural and social barriers, but a number referred only to the barriers in third-world countries (Peru, Brazil, African countries etc.), not Europe. For the individual, of course, how the organization of a society and the values associated with it, create barriers to adaptation is not without significance, and it is essential to clarify whether there are insurmountable limits to the way in which a society can adjust to impending climate change. Of course, it is also important to show how the uncertainty

*Translator's note: "Scandinavia's leading independent think tank", its main objective being "to enable key decision makers to navigate and operate in an increasingly fragmented and complex society." For more information in English, see www.mm.dk/default.asp?indhold_id=39&emne=english.

often self-manifest in the predictions about such change, undermines the willingness to adapt.

But individually and ideologically determined powerlessness on the part of the individual was not taken into consideration at this conference.

This research, however, leaves some aspects unexplored, such as how the individual citizen in the family, workplace and company perceives the environmental and climate problem, and how to "find him where he is, and begin there". Studies are needed that focus on the discrepancy between environmental awareness of the individual and environmental action felt by the individual, and hence might shed light on all the barriers to responsible action that may emerge in the individual's consciousness.

This research needs to pool experience of the way this discrepancy is perceived by citizens in practice, and of the barriers anticipated. It also has to be conducted in tandem with some consideration, or some vision, of the kind of view of humankind, society and nature able to help overcome those barriers. Although this kind of research and consideration is at its weakest nowadays, it is nevertheless the kind surely most needed if the various campaigns for mobilizing the individual are to "hit the spot".

In Denmark, Jeppe Læssøe, a psychologist at the Danish School of Education, Aarhus University, is one of the few to have researched into everyday life to detect the forces that can foster and inhibit our involvement in safeguarding sustainable development. He has worked on studies of the social and psychological conditions governing local citizen participation in environmental projects, with green families' different ways of life and experiences. His research also encompasses a more theoretical project on links between lifestyle development, the psychology of consumerism growth and strategies for sustainable development. In particular, he has analyzed the barriers that can be formed by lifestyle, conditions imposed by the social framework, social relations, and personal psychological prerequisites such as environmental stress, repression and lack of benefit perception.

One of the few works in progress abroad includes a German PhD dissertation on *Environmental ethics and environmental action* by Christoph Baumgartner[3] from Erhard Karl's University in Tübingen. Baumgartner places the focus squarely on the opposition between external environmental awareness (we know action ought to be taken) and external environmental action (we are not doing anything), referring to a number of bar-

riers that prevent the environmentally conscious person from translating his consciousness into action. He emphasizes both the physical obstacles to action (the complex, invisible, insidious dangers we discover too late) and the mental obstacles (feeling of impotence, fatalism, the purely economic mindset, habitual thinking etc.) that block "ecologically responsible acting".[4]

This form of research and reflection strikes us as being the most important if it seriously intended to galvanize a popular movement for the environment.

We plan to take a different route to Baumgartner, viewing the overcoming of barriers to environmental awareness, not just as a question of individual morals, but as a question of social accountability. In our review of the individual barriers, therefore, we will stress how they block social accountability, i.e. responsibility not merely for local society but for global society.

The outcome of our investigation, therefore, will be a consideration of the way the cosmopolitan awareness, which has gone from strength to strength in the past decade, can be leveraged for the practical implementation of environmental and, more particularly, climate awareness in the individual. The climate-aware person understands himself to be a citizen of the world who is both an individual (not only a citizen) and a political being with joint responsibility for the entire globe.

The physical barriers, i.e. barriers blocking acknowledgement of the physical world state, are primarily:

*Invisibility*. We are used to being able to see or feel obstacles to our actions, but the increased carbon dioxide in the air can neither be seen nor felt. Although we feel a milder winter, for example, we cannot see or feel what causes it to be mild. Like so many scientific insights, our insight into the causes of global warming is based on scientific data comprehensible only to specialists. Admittedly, we can see pictures of landscapes, where glaciers have shrunk by comparison with older pictures, for instance, but we cannot see that such melting is caused by human activity.

*Complexity*. We have no choice but to simplify the things we imagine. The globe's climate systems are of a complexity that is seemingly unintelligible to us yet forms one of the foundations of scientific investigation. The upshot is that we can never be entirely satisfied that the results tell us

everything we need to know. Decisions on a societal level that we make on the basis of this will always involve some uncertainty, or perhaps even risk being inappropriate and not having the desired effect.

*Imperceptibility*. The physical barriers, however, are not just formed by invisibility and complexity, but also by the fact that the effects are often cumulative and offset. They are only understood over time and therefore do not correspond to the effects we normally experience from our actions. Thus environmental change often has an insidious nature of imperceptibly small steps, which scientists can detect by means of calculations of microscopic changes over time, but which we do not see or feel.

*How to deal with the physical barriers*, above all, what they consist of and how they are formed needs to be clarified above all. Here a better understanding of the terms governing scientific knowledge in general and of the climate's physics in particular can be very useful. It must also be demonstrated that, even in the most likely acknowledgement of climate issues, uncertainty cannot be used to deny this realization. It may be with good reason, certainly, but an absolute safety net for mistakes does not exist.

Even more of an obstacle, however, are the psychological barriers, i.e. the ideas about ourselves and the nature that surrounds us that block the individual's responsible practice, especially:

*Fatalism or "belief in destiny"*. This leads to paralysis, the inability to act, because it assumes that all our efforts on behalf of the environment count for no more than a "snowball in hell", and that technological initiatives such as green energy, sophisticated utilization of resources etc. are "technological stopgaps", which are a smoke-screen for such powerlessness.

This fatalism is a deterministic outlook on life. It will be found in both those battling on the front line for the climate and its sceptics. That is to say, partly in those who think global warming is not caused by human activity but unavoidable on account of the sun's radiation and other climatic factors over which humans have no influence, and partly in those who think such warming is chiefly anthropogenic but cannot be slowed down, either because it is too late or because too few people can be persuaded to take action. This latter form of fatalism, moreover, can be linked to a lack of trust in politicians daring to propose or being capable of carrying out the necessary measures.

*The insignificance complex*. It is tempting for the individual person to say that he or she can do nothing, because the result they would like to achieve can only be achieved if many people are involved in realizing it. Since, as a rule, the individual is insignificant as an action factor in large-scale contexts, the inference is that one's own action will be a mere drop in the ocean if nobody else can be seen to be acting with the same objectives. And the same can apply to action as a group and as a nation. What use is it, for instance, for Denmark to significantly reduce its carbon dioxide emissions if other countries, particularly large nations like the USA and China, do not do so? The result is that one abandons environmentally responsible action.

*Shortsightedness*. Most people are keen to ensure that their children and any grandchildren have ample opportunity for self-expression and self-realization, but looking way beyond the time-frame of one's own life calls for additional exertion. So far people have not needed to make such an exertion, and natural mental habits thus need to be broken if we are going to think of other people and life on earth more than 100 years hence. That is why it is difficult to persuade oneself and others that it is possible to deploy resources on the distant future of humanity.

*Surmounting these psychological barriers* not only requires increased insight into how people perceive them, and what influence they have on their day-to-day lives; it also presupposes clarification of the arguments that can win them over and the institutional changes it will take to endow environmental responsibility with a framework that favours it. Among other things, what is known as "disaster rhetoric" must be analyzed and discussed with a view to ensuring that the environmental rhetoric does not generate more fear than called for by the scientific evidence. Ways must be pointed out of finding a golden mean between manipulating people's feelings and adopting an altogether callous intellectual line of argument. In other words, a more sober debate is needed on the problem of climate change, and we hope to contribute to that here.

However, this investigation can only be a first step towards more extensive research into environmental and climate awareness obstacles. We can only build here on suppositions about the way such barriers are perceived by the individual, and which views of the relationship between human beings and nature take precedence over such blocks on the consciousness. We possess neither the "field surveys" to give these suppositions a solid foundation nor

educational studies into ways of teaching pupils and students at schools and colleges to overcome those barriers. But the philosophical analysis we can perform here is necessary in order to inform about the need for further sociological studies on e.g. leaders of industry or primary school teachers' perception of the barriers, and it is the first step to formulating the education and training needed if the population at large is to engage in the fight for a better environment and a healthy climate. Here, then, we will philosophically study both the physical and the psychological barriers to environmental awareness with a particular eye to the climate problem and attempt a realistic and thorough consideration of the possibilities for and difficulties associated with overcoming them in a cosmopolitan sense of commitment.

PART I

# THE PHYSICAL BARRIERS

CHAPTER 1

# INVISIBILITY AS A BARRIER

With the UN's International Panel of Climate Change's (IPCC) Fourth Assessment Report (AR4)[5] from 2007, the climate debate has shifted its focus within a very short span of time. Previously, it concentrated on whether there was scientific evidence of global warming and, if so, whether that development was attributable to human activities. Today, only a minority of researchers and debaters are sceptics. Instead the focus of the debate has shifted to the question of how best to tackle the situation, and how far we have to go in the form of practical initiatives and financial priority-setting in the fight to limit global warming.

However, regarding the discussion about adapting to the existing development and containing future damage to the global climate, the individual encounters a number of physical obstacles, which condition our cognitive and reflective basis. The problem is that the direct causal link between the individual emission of carbon dioxide and global warming is invisible. Only by rather roundabout means – the moment climate change manifests itself into tangible effects – can we make this connection in the wisdom of hindsight. Not only are human beings forced to adapt to a development that no one can see directly with the naked eye; in addition, the assessment of data and models of future scenarios provided by scientists which form the basis of our ethical choices and actions are of a complexity that seemingly cannot be simplified. The complexity of the scientific data would determine/restrict our ability to make decisions on a sound basis. In precise terms, this means that we can overlook important factors, and that we can be overpowered by the imperceptibility with which global warming is taking place, the result being that we risk suddenly coming face-to-face with a catastrophe that we were not aware of along the way.

In this and the two following chapters, a more detailed account will be given of the three physical barriers – invisibility, complexity and imperceptibility – as obstacles to acknowledging the climate problem, starting with *invisibility*.

**Rendering global warming visible in the conscious psyche**

The clarion call from the Intergovernmental Panel on Climate Change (IPCC) on the reality of global warming and its correlation with greenhouse gas emissions has truly put global warming on the political agenda. Both the conclusion to the 2007 report from the IPCC, the intense focus on the climate issue in the media and, not least, the awarding of the Nobel Peace Prize to both the IPCC and the former American vice-president Al Gore have branded global warming indelibly on the minds of the individual.

The heightened awareness of the consequences of this warming has meant that now, to a greater extent than previously, there is a tendency for the individual citizen to link fluctuations in weather conditions, such as floods and extreme precipitation, to the issue of global warming. Global warming has, so to speak, become more visible in our consciousness.[6] The problem, however, is that although this visibility in people's consciousness is expressed in a concern for the future and an immediate feeling of responsibility on the part of the individual citizen, it does not lead to any pronounced degree of proactiveness.

Comparisons with studies of citizens' knowledge and awareness of global warming undertaken in Denmark in 2005 and 2007, respectively, show that even in 2005, citizens had a relatively immense awareness of global warming and its apparent problems.[7] At that point, however, some uncertainty prevailed as to what greenhouse gases were, and in what contexts they are emitted. In 2007 a similar study shows that up to 85% of the respondents acknowledge climate change as a reality and consider global warming to be a problem. No fewer than 77% of those questioned think that global warming will affect their day-to-day life and quality of life to some or a great extent within the next 10-20 years.

This tendency from the Danish studies is also visible in the Eurobarometer survey from 5 March 2007, which deals with energy and climate change.[8] Here again, half of the respondents seem to voice great concern about climate change, and a further 37% say they are worried to some extent. A full 82% of those questioned are aware that their energy consumption and energy production in general have an adverse effect on the climate. In other words, there is no doubt that global warming has become more visible in the consciousness of the population, both nationally and internationally. The direct implication of this visibility in the conscious

psyche makes people predisposed to connecting the extreme weather conditions we are experiencing with a consequence of global warming taking place.

But although the inner consciousness hones the attention and causes us to interpret extreme weather conditions as a result of global warming, the problem is that our experience proper does not corroborate the direct correlation between our actions and developments in the global climate. This is due to our 'perception' of this phenomenon being based exclusively on what scientific studies tell us about climate change and its consequences. In other words, it is a visibility based on images and foregone conclusions that we have been spoon-fed.

In both the Danish and the Eurobarometer survey, it emerges that the respondents think they should alter their behaviour and make an active effort in the form of installing energy-saving equipment within the next ten years. Nonetheless, only very few are prepared to make that change- and restrict their consumption of carbon dioxide. It is striking that 82% of respondents think the best way of tackling climate problems is for the European Union (EU) to lay down rules and regulate consumption of greenhouse gases.

**The physical invisibility of global warming**

The scientific observations and measurements taken over many years are an essential prerequisite for discussing visibility in the inner consciousness. However, global warming is an abstract variable that on the face of it cannot be visualized. What we see when we link the experts' studies together with the images in the media, and with our own observations of the weather, is only ever the consequences of that global warming. By contrast, the actual global warming process cannot be observed with the naked eye. In other words, the motivation to act must rest purely on the human ability to associate what we see with abstract thought, and thus reflect on the relationship between *visible* effect and *invisible* cause. The invisibility of global warming thereby becomes a possible barrier to the individual's motivation to act in two respects, both of which are connected to our ability to associate: The cause is invisible, and our own vulnerability is invisible.

- *The cause is invisible.* We cannot see or feel the direct link between human activities and changes in the weather recorded locally. The immediate reaction, therefore, is to act on the consequences of that global

warming by, e.g. safeguarding against flooding, or making an effort to rescue species of animals and plants close to the point of extinction, and their habitats, rather than acting on the actual process of global warming. The physical invisibility of global warming thus forms a possible barrier in the consciousness, because the motivation to act is predominantly activated when one's own actions can be specifically linked to direct consequences. There is another problem in this context. Not only is global warming invisible to 'me', but the consequences of 'my actions' – whether or not one is actively acting to combat global warming – also remain invisible. This makes the motivation to act highly vulnerable. At first sight it comes more naturally to be proactive where one's actions can be seen to be making a difference. As a barrier, moreover, such invisibility is compounded by the fact that the effect of such actions does not show until many years down the line. Only scientific investigations can corroborate and convince us that there is a correlation between human actions and the weather. The immediate associative sequence in the individual's consciousness is confined to the relationship between global warming and changes in the weather, whereas the link between 'my' individual actions and the climate is and remains physically invisible.

- *Own vulnerability is invisible.* To a large extent the ability to associate the climate problem with personal vulnerability affects motivation to act. Even though changes in the weather are visible, these are not immediately associated with our personal lifestyle or, for that matter, with health and wellness. The problem of association increases when it comes to appreciating the relationship between extreme weather conditions and the individual's vulnerability. There is concern about the future, but no association between the already occurring heat waves, floods or, the threat of spread of diseases like malaria etc. with one's own everyday plight. Thus it is not enough that we are presented with risk scenarios showing that 'I' am in the danger zone. An English study shows, for example, that because the elderly involved in the study do not view themselves as being vulnerable to lengthier heat waves (heat stress), they react to the particular situation in hand (e.g. by going away or by holing up indoors), rather than realizing the importance of adapting to these climatic conditions in the longer term and acting accordingly.[9]

This very perception or acknowledgement of one's own vulnerability is crucial to the individual's motivation to act. If we understand our own vulnerability towards climate change, we are presumably more prone to act preventively than if we fail to perceive this vulnerability.

**Global warming is abstract**

What seems to be crucial is that this vulnerability does not immediately show up at an *individual* level. The reason for this may very well be the distance created by the physical invisibility of global warming, where no immediate correlation can be seen between our own actions and the vulnerability we suddenly risks finding ourselves in.

Thus, in the different studies of people's consciousness and attitude to climate issues, there are indicators that the invisibility of global warming remains a barrier as long as it persists at the abstract level. If the individual's vulnerability is to be associated with global warming proper, then on the face of it there is a practical challenge in telling people how global warming can be expressed in extreme local weather phenomena; and, in addition, how diseases that previously affected localized regions, can be spread across the globe. Together with a more detailed study of what activates the individual's perception of vulnerability, therefore, some concretization of local climate change and its importance for such may be necessary for an understanding of what global warming means to 'me' and hence also for my motivation to act out of a sense of responsibility.

CHAPTER 2

# COMPLEXITY AS A BARRIER

Although the members of the IPCC agree both that global warming is a reality and that it is strongly influenced by human activities, there is great cautiousness with regard to specific regional and local changes. The IPCC fourth assessment report thus highlights that they are difficult to evaluate because adaptability cannot be predicted, just as there can be non-climatic factors at play affecting regional changes. This illustrates a problem with global warming, which in reality is linked not so much to the actual problem of climate change but rather to the complexity associated with the way in which we talk about the problems of global warming. Global warming constitutes what the sociologist Niklas Luhmann has called an 'ecological danger', by which he means that global warming is an external-world problem that poses a danger to society and therefore requires both local and global initiatives, imposing requirements in terms of 'ecological communication', i.e. about global information, discussion and joint action.

Ecological dangers do not arise or manifest themselves on their own, but require society to react to the surrounding world and acknowledge that the development taking place is a problem. It can therefore be said that, if there were nothing as such to threaten existing social communications or social communality, it would scarcely achieve resonance. Ecological dangers are only acknowledged and conveyed as ecological communication the instant there are movements or protests in society that draw attention, to the fact that global warming is a problem, or rather a societal danger.

**Ecological dangers and ecological communication as an expression of complexity**

Ecological communication is an attempt to view society and its relationship with the world at large (i.e. the relationship between society and nature/the environment), with a view to generating a social consciousness about the ecological dangers brought about predominantly by technological developments in society.[10]

The hallmark of this communication is that it is characterized by inner dissimilarities, depending on 'the eye of the beholder'. The consequences that can result from e.g. global warming are conveyed and treated differently, therefore, depending on the system they are being communicated in. The biologist will without doubt, view the climate problem and the most central problematic issues from a different angle than the sociologist or the economist; at the same time, the different parties will render different accounts of the problem and have different constructions of 'the truth'. The result, then, is that although ecological communication strives for a holistic picture, it exposes instead a complexity of ways in which ecological dangers such as global warming can be viewed or observed. This explains the fact that there is disagreement as to how to tackle the ecological dangers and which 'solution models' are best. The climate problem is not a simple piece of arithmetic between humankind and the environment.

In other words we are facing a complexity of factors that make it difficult for us to maintain an overall perspective and transparent view of the choices most expedient in terms of securing sustainable development. For instance, there is no *one* message, but a complexity of offerings on how to bring about sustainable development. In a sense there is a paradox in this complexity, in as much as it is a consequence of natural science's endeavour to gain greater insight and a better overview of the way the world is made up and how humankind and non-human nature affect one another. Complexity compels us to acknowledge that the more knowledge we appropriate, the greater the complexity we face having to tackle in our ethical stance on the actions we have to undertake to ensure sustainable development. In the process, complexity becomes a possible barrier to human's motivation to act.

**Complexity in modern science and its condition for human knowledge**

The question is, which aspects of complexity make it a possible barrier to the individual acknowledging personal responsibility and to motivating responsibility?

From the second half of the twentieth century, our understanding of complexity has changed with the world view presented by natural science, and more particularly with the discovery of quantum mechanics and chaos theory. Whereas the classical understanding of complexity predominantly avers that something is complex because there are many considerations to

be taken into account, there is a convolutedness inherent in the modern understanding of complexity which per se, excludes a holistic approach. With the modern understanding of complexity the world *is* regarded basically as a whole, but observing it more closely, it turns out to consist of an infinite number of parts, all of which factor into the way things in the world are expressed. The individual parts can continually be divided into many, and ultimately the correlation between these parts becomes entirely impossible to keep tabs on.

The feature characteristic of the physical worldview with quantum mechanics and chaos theory is precisely that *probability* replaces certain knowledge and logical inference from cause to effect. Latent in the understanding of this complexity, then, is a coming-to-terms with the modern concept of certainty, because the holistic view required in order to speak of certainty and the influence between the various 'parts' or 'systems' excludes per se the possibility of predicting or projecting a definitive result.

As humans, we live in what the sociologist Ulrich Beck has described as a 'risk society', where we are forced to operate with 'hazards' and 'risk'.[11] The decision about 'the future of the world' lies in the hands of the human being, and not in any 'external objective truth'. Hence, such decisions need to take their point of departure in a debate on sustainability, ethical responsibility, and the values and priorities that must be embraced as a basis for the decisions to be taken.

We constantly face the problem that not all factors can be taken into account in a scientific outline of future risk scenarios. The risk we take may pose a danger to some others. Complexity places humans in a new light in relation to earlier individualistic views of the human being. No longer is it possible to separate human affairs from the surrounding world, and no longer is it possible to isolate one problem from another without this in itself becoming a risk on which a stance must be taken. We must not only relate to future scenarios based on calculations of existing data, but also face up to the fact that the picture emerging of climate change and the human impact on such changes is based on an interpretation of different data, all of which are associated with uncertainty surrounding the relationship between what is caused by humans and what is 'natural'. The complexity of the climate problem is perceived as overwhelming, both because we cannot with any certainty predict global warming and the consequences it will have for our day-to-day lives, and because we cannot take on board

all the external-world problems with which we are presented. Complexity becomes an alienating barrier that makes it difficult for the individual to pin personal responsibility on something concrete. It can be difficult, therefore, for the individual to adopt an altogether hands-on approach to the problem without being overwhelmed by complexity and feeling powerless and paralyzed as an isolated individual.

But this is where acknowledging the relationship between the ecological dangers, understood as a societal communication about external-world problems, can be brought into the picture and used to turn complexity into a constructive societal mechanism. Like Luhmann, then, we can point, inter alia, to popular movements or organizations acting in protest or taking the lead out front as a positive dynamic in creating ecological communication about external-world problems. It can thus make the relationship between risk and danger visible. The moment the popular movement signals, by virtue of its proactive agenda, that the encounter involves a danger, and simultaneously perceives that the risks taken are unavoidable. It means in practice that disagreements and differences of opinion are expressed, and it becomes clear that there is not just one solution to the question of sustainability in relation to the climate debate. In the process it becomes clear, that although one personally is willing to take responsibility, one cannot expect that others would be willing to do the same, as they may have a different perception of the world.

This insight does nothing to reconcile the debating parties in the sustainability debate, but it is an aid to underscoring disparities and highlighting differences of opinion and fundamental views of nature with a view to being able to handle these differences in decision-making processes.[12]

On the face of it, the experience of lack of certainty and complexity reflected in the multifaceted communications about global warming may be perceived as a barrier to the individual's justification of personal responsibility. Yet it is precisely in the internal mechanism of ecological communication that the path to breaking that paralyzing complexity must be found. When *Mandag Morgen [Monday Morning]* concludes in its survey that there is a productive basis for a mass breakaway towards a willingness to rise to the climate challenge, for instance, this in itself can be interpreted as an initial move towards breaking down complexity as a barrier in the climate debate. Most of the environment-centred problems in evidence today operate across national boundaries and require attention on a global level;

that accentuates the need for political cooperation in a cosmopolitan community that cuts across cultures and physical frontiers. Thus the United Nations Framework Convention on Climate Change (UNFCCC), the Rio Declaration and the Kyoto Protocol can all be seen as examples of a global attempt to act despite, or perhaps because of, complexity.

In this chapter we have accounted for the way in which the complexity that characterizes both the world picture of science and societal communication on global warming can act as a barrier in the individual's consciousness. The immediate barrier lies in the fact that complexity triggers a feeling of being overwhelmed and paralyzed, predominantly linked to the perception of not being able to obtain enough knowledge, since knowledge leads to a need for more knowledge and so on ad infinitum. Scientific studies and expert evaluations do not always complement one another, but can often point precisely in opposite directions. This is a fundamental problem about complexity, whereby the more knowledge we are presented with and realize we need, the greater the risk that we no longer dare trust our own instinct to act and actively respond to what we perceive as ecological dangers. However, the correlation between ecological communication and popular movements shows that rendering complexity visible can be turned into something positive and be a strength in the debate on sustainability.

CHAPTER 3

# IMPERCEPTIBILITY AS A BARRIER

The time dimension generates another possible barrier to the individual's awareness of the necessity of personal responsibility: *imperceptibility*. The consequences of global warming sneak up, surreptitiously, so we grow accustomed to changes in the climate before we discover them and therefore relate to risk in the belief that we can control its development. But we overlook the fact that a risk can present itself as a danger that threatens not only others but ourselves too.

This chapter will take a closer look at imperceptibility as a possible physical barrier that is linked to the problem of invisibility and is one of the hallmarks of global warming as an ecological danger.

**Imperceptibility as a barrier in relation to invisibility**

The changes that take place in the form of global warming occur gradually without us noticing them. Although we may well be able to see changes in some cases and recognize them as part of global warming, such changes are generally small and do not usually affect our lifestyle to any particular extent.

However, we do not know whether such changes will gradually have greater ramifications for our lifestyles, or whether at some point they will no longer develop steadily but suddenly manifest themselves as a natural disaster. Although the 20, 50 and 100-year timelines presented by the UN climate panel in the future scenarios are very short in terms of the age of humanity and the Earth as such, they are nevertheless timelines which the individual will not consider to be 'just around the corner'. These aspects of imperceptibility per se can be perceived as paralyzing, either because the individual does not have such an urgent or pertinent sense of responsibility, or because the individual is overwhelmed by fear and gives up on the basis of the attitude "what use is it my doing something if things are going to go wrong anyway?"

Imperceptibility as a barrier is linked very largely to the barrier of invisibility here, and to the mechanisms that come into play in this connection,

for the fact that global warming is *advancing insidiously* means that we do not notice the change and do not physically connect global warming with any problems we might be facing. What is more, many people in the most northern and southern regions of the world will not actually be on the receiving end of global warming and, if they are, it may just be noticed as 'pleasant', in the form of an early spring and a milder climate on the face of it.

The moment climate change affects our lives in a practical and financial way, e.g. in the form of tangible damage to our property or even loss of life caused by extreme weather conditions, it suddenly becomes relevant and concrete; and only in this instance does climate change stop becoming a phenomenon presented in the media, but a realization that the climate issue concerns 'me', not just 'others'.

But imperceptibility is also a possible physical barrier to acknowledgement in the sense that, when something that happens goes unnoticed, we get used to the changes before we discover them. Therefore, climate change can easily be regarded as one risk among many others that we can calculate and in that way control, and/or it can be regarded as insignificant or even 'normal'. In so doing, we risk overlooking the danger that activates fear and hence stimulates the ecological communication necessary to motivate personal as well as collective responsibility in the form of ethics of sustainability.

**Imperceptibility as a barrier in relation to complexity**

Readers of the UN climate panel's fourth assessment report encounter a terminology of uncertainty that pervades all the panel's statements. The overall assessment report together with the three sub-reports presents its evaluations on the back of a terminology that refers to different levels of probability and at no point speaks of certain conclusions.[13]

The lack of certainty always leaves room for doubt and uncertainty about the impact of our efforts and about the danger of global warming, which can lead to impotence. As pointed out in the previous chapter on complexity, it is not possible to obtain an all-rounded picture of the future just as it is not possible to identify and quantify the complexity and thus gain a complete risk overview of the precise consequences of global warming. So there is always a risk that what we do is not sufficient, and conversely a probability that in retrospect our actions may seem exaggerated or, at worst, in vain.

Given the time dimension, the concepts of risk and danger can easily become conflated or overlap. The future is and remains unpredictable, however much caution might be proceeded with when calculating a risk. The time dimension makes it even harder to take rational decisions on the basis of risk calculations, because it makes it difficult to distinguish between risk and danger.

Any calculation of the risk of future damage makes it clear that future damage depends on present decisions. Thus when the sociologists Ulrich Beck and Niklas Luhmann introduced the concept of 'risk society' into the mix at the end of the 1980s, their point in this connection was to stress the relationship between decision-making and responsibility. Hence the way we handle and regard a problem like 'global warming' is a product of the way we observe society in a more general sense. The awareness that humankind is intervening in natural systems through instantaneous activities provides a perception that the world can be shaped, altered or controlled. But with this awareness also follows the recognition that the decisions we take (individually as well as collectively) have consequences that cannot always be predicted but may prove unfortunate and at worst catastrophic.

When we are dealing with problems such as global warming, it makes more sense to put the risk perspective in relation to something else. That 'something else is the danger' perspective. Inherent to the risk/danger perspective is the recognition that human activities and decisions affect the surrounding world, as well as an acknowledgement of a *responsibility* that extends beyond what is normally understood as responsibility. Responsibility in relation to external-world problems – such as global warming – is characterized in that it cannot be restricted spatially, temporally and socially, and there is no compensation for the change once the damage has been done. Global warming as a phenomenon poses a danger to us precisely because we cannot foresee and calculate it. The problem with the danger, however, is that it can easily be used as an excuse for opting out of our responsibility. After all, the thinking goes, one cannot be held responsible if the damage was not factored into one's risk calculation.

A characteristic feature of imperceptibility as a possible barrier to acknowledging individual responsibility and to responsible action is its close ties with the possible barriers of both invisibility and complexity.

Hence, on the face of it, there are two challenges inherent in imperceptibility as a barrier:

- Partly, there seems to be an immediate need for a more detailed study of the way in which 'global warming' can be made concrete, so that the individual can translate, with greater ease, the perception of responsibility into specific actions.
- Partly, there is a challenge in communicating the danger in such a way as to not have a paralytic, but rather an incentivizing effect, in the sense of sparking an awareness that choosing *not to act* is also an action, but an action that directly contradicts responsibility.

The challenge as regards surmounting imperceptibility as a barrier lies in emphasizing the danger perspective as a motivating force for taking responsibility by appealing to man's possibility to shape and control the world without simultaneously resorting to a disaster rhetoric that makes the danger seem so formidable and insurmountable as to act as a block to motivating responsibility and responsible action.

In the preceding three chapters we have attempted to chart invisibility, complexity and imperceptibility as physical aspects of global warming.

Against the background of the barriers to consciousness and acknowledgement inherent in the invisibility, complexity and imperceptibility of global warming, it is clear that activation of personal responsibility must primarily be effected by increasing social debate and conveying the consequences of global warming for the individual, particularly through media, schools and folk high schools.[14]

In order to overcome the physical barriers in relation to a motivation to act and personal responsibility in the climate problem, a balance must be found so as to convey global warming as a serious problem. This requires action both as a collective and an individual at all levels of society, and conveying it as a problem that can be handled by weighing up risks and priorities. Whereas the first kind of conveyance highlights the danger perspective as a necessity to motivate individual responsibility, the second kind of conveyance is instrumental in lending it concrete form and giving the individual an opportunity to project that responsibility in the form of action in relation to a concrete problem.

In the following chapters we will focus on the *psychological barriers* that can arise in the individual's consciousness and form an obstacle to the individual taking responsibility.

PART II

# THE PSYCHOLOGICAL BARRIERS

CHAPTER 4

# VIEW OF NATURE IN THE CLIMATE DEBATE

Global warming, greenhouse effect, climate change, flooding, drought, storms, and rising sea levels …

We are bombarded daily with news about the dire state of the climate on our globe. From one extreme, i.e. the environmentalists and ecologists, there seems to be no end to the prophecies of doom. Something needs to be done now, or it would be too late. The sceptics, on the other hand, cushion these theories to a degree that may possibly be a little too 'cool' when it comes down to it. But what should we actually believe, and how should we relate in practice to the very mixed messages we are getting about the state of the globe?

In relation to the climate debate it is central to ask why some people regard global warming as an impending danger and others as an issue that ought to be treated on an equal footing with many other problems in society. The thing that is taken to logical extremes in both debates is the question of whether, or to what extent, one should restrain one's activities in order to protect the non-human nature. The answer is not straightforward and depends on the particular view of nature or approach to nature adopted as a basis for the values expressed.

**Myths of nature and the climate debate**

It may be appropriate to consider the line of argument in the climate debate as an expression of different *views of nature*, i.e. ideas about the essence of nature as such. Put slightly crudely, the arguments of the environmental and climate debate can be described under four basic myths of nature,[15] which form the basis for particular ways of relating to environmental matters. These involve 'myths' in the sense that they are four views of nature, each used as if it were an absolute or metaphysical definition of the very essence of nature. These 'myths' represent specific perceptions of non-human nature, and these perceptions are used as a 'rational' foundation in the different arguments of the climate debate.[16] Thus, we speak of:

- *nature benign*, which human activity cannot impact. However much we pollute, 'nature' will find a way of self-regulation to cope;
- *nature capricious*, which human beings are in a position neither to predict nor to alter, and which cannot be managed or regulated by means of political initiatives or the individual's actions;
- n*ature perverse/tolerant*, which requires a great degree of administration by humans. Generally speaking, regulation is not necessary, but in certain cases we are in a position to influence nature to such an extent that its tolerance threshold is exceeded, and a catastrophe occurs;
- *nature ephemeral*, which is vulnerable to the slightest impact. This view of nature appeals to an ethical responsibility in human beings to an extreme extent.[17]

The point of these four 'myths' is to identify certain basic views that play an essential part in the political as well as the social debate on problems such as global warming and which, used in contradistinction to one another, create a basic diversity in the climate debate that complicates the possibility of reaching an agreement.

It is *not*, then, about finding the right 'myth' – 'the truth' – and concluding who is right in the climate debate. On the contrary, it is about pointing out that 'the truth' is not absolute, and about finding a way of charting, comprehending and handling the diversity of arguments that are voiced in the environmental debate and create the fundamental disagreements, particularly in the climate debate.

It is important to stress that this does not involve total dissolution of 'physical nature'. Physical nature is real, and observations of climate change by science are also real, but the reality we are presented with depends largely on the values applied to that reality. Thus there is agreement among experts that global warming is taking place. That warming can be measured, as can the changes. The disagreement arises in the interpretation of the data interlinking human activity and 'surrounding nature'. The reason that such disagreement can arise is precisely the uncertainty attaching to complexity as a basic condition for any scientific observation. Neither the dissemination by science of research results nor the political reactions to those results are 'value neutral' or rather 'myth neutral'.

**Myths of nature and the question of adaptation**

In the climate issue the various myths are reflected particularly in connection with the global discussion about how humankind *must* adapt to climate change, and to what extent we *can* adapt. In this context adaptation is taken to mean adaptation or adjustment in natural and human systems, based on actual or anticipated climate changes, or the effect of such, which can ward off damage or explore the scope for benefit.[18]

The moment adaptation is mentioned, it also needs to be realized who or what must adapt, and what must be adapted to. Yet there is little consensus on the meaning of the word 'adaptation'. For some, 'adaptation' is about taking active responsibility for protecting vulnerable natural species, so that neither they nor human beings will suffer an ill-fated disaster in the future. For others, adaptation has become a passive concept in the sense that it does not involve any ethical obligation but refers exclusively to a purely technical question of what society can actually do to preserve its existing lifestyle. What is read into the concept of adaptation, and whether this can motivate ethical responsibility therefore depends on one's view of the 'nature' that must be adapted to, and the values – or rather the ethics – of sustainability being attached to this view of nature.

The four myths illustrate the opposing messages in the media-facilitated debate to which each individual citizen has to relate. These messages are largely instrumental in creating the awareness that must ultimately motivate personal responsibility for sustainable development, particularly in the climate issue. The individual citizen must assimilate the information being communicated in the debate and make up his or her own mind. This can be difficult with so many different interpretative readings of the issue, especially if they do not square with the personal perception of nature or the personal values embraced in the everyday sphere.

CHAPTER 5

# POWERLESSNESS AND THE PSYCHOLOGICAL BARRIERS

The prevailing debate on global warming is generally characterized by much disagreement about the consequences climate change brings with it. In the debate, emphasis is attached to widely diverging aspects – ecological, economic and social – which are affected by the political decisions to combat global warming. What is striking is how differently the development is presented and how differently the researchers and politicians taking part in the debate regard both non-human nature and human beings and society's responsibility for it. For the individual, therefore, it can be difficult to gain an overview of what the debate is actually about and therefore making it even more difficult to form a personal opinion capable of motivating individual responsibility in the form of proactive measures. The danger is that the individual will lose his footing and allow himself to be hemmed in by a number of consciousness-oriented barriers.

Apart from the physical barriers, the actual link between sustainable development and popular participation includes a number of barriers connected with the individual's consciousness and his motives for action in relation to the actual notion of sustainability. The common denominator for these individually oriented barriers is that they are bound up with our understanding of our individual and social role in relation to sustainable development, not with our understanding of global warming as a physical phenomenon.

Two categories of individually oriented barriers are referred to. These barriers can be divided into two categories, as Jeppe Læssøe has done, namely the *structural barriers* attaching to the individual's personal priorities on a daily basis and depending on the societal structures, and *psychological barriers*, which are pitfalls that can arise in the individual's consciousness as a reaction to the existing debate.[19]

The first category of barriers is connected with some general trends in society. These are structural barriers that affect the individual's commitment

and revolve around the individual's *practical* priorities on a day-to-day basis. These types of barrier often act as a block to the motivation to make some effort for the environment with a view to sustainable development, causing the individual to consciously choose to prioritize other things, e.g. due to pressure of time or economy in his daily round.

The other category is linked directly to sustainable development as a topic and as a subject for citizen participation.[20] *Psychologically oriented barriers* of a more fundamental nature are the ones that can obstruct the individual's acknowledgement or awareness of personal responsibility in relation to the question of sustainable development.

In this chapter we shall look more closely at the nature of what we term here psychological barriers; and at some of the most seminal factors in the existing debate on global warming and the climate problem that can trigger these barriers.

**Powerlessness as a fertile medium for barriers**

In conjunction with the climate problem and the question of sustainable development, psychological barriers are normally triggered as a result of the individual's experience of and reaction to politicians and experts stating opinions, scope and consequences of the climate problems. It is characteristic of the climate debate of recent times that among opinion-formers there is no longer a majority of sceptics arguing the case for the existence of scientific studies that militate against global warming. Nonetheless, the media are still painting a picture of great uncertainty as to how great a weight global warming should have on the international priority list of global social problems to be solved. Some call the debate hysterical and feel that the financial commitment to cutting carbon dioxide emissions in the atmosphere as part of the follow-up to the Kyoto Protocol is out of proportion.[21] Others link virtually all global and local social problems to global warming. Common to both camps is their accentuation of a large number of scientific studies underpinning their point of view. At the same time, a number of experts emphasize that the real-term knowledge we have about global warming and its consequences for the future is highly uncertain and limited. In other words, it is difficult for the layman to create his own overview of the genuine scope of the problem. But taking responsibility calls precisely for an awareness of what it is one is taking responsibility for. One major problem in connection with the ethics of sustainability, therefore,

is that responsibility extends further out into the future than just responsibility for specific fellow human beings here and now, in that the concept appeals for responsibility for non-human nature and future generations.

The actual concept of sustainability can trigger barriers in the individual, because it comes across as being so abstract. The problem is that the concept of sustainability is vague or hard to define. What does it mean to guarantee sustainable development in relation to the environment and nature and for future generations – and, in that case, what part of nature are we securing? There are not one, but many different versions of how best to answer these questions. In other words, there is no concrete plan outlining how to achieve sustainable development or what it would entail.

The abstract nature of the concept creates a gulf between the individual's personal experience of nature and the environment on the one hand, and collective 'nature' as something remote and indeterminate on the other. Thus Læssøe and Iversen, in an analysis of 'Naturen i hverdagslivet' [Nature in everyday life], stress that the personal experience of nature and the values attributed to nature by the individual in his everyday life do not necessarily form a cohesive entity with the values and attitudes he or she expresses in relation to environmental issues.[22]

Global warming acts as an 'alien threat' that is difficult to relate to when it can be neither seen nor felt – or the scope of the problem mapped, for that matter. Therefore, it is primarily through the facilitated debate and information generated about global warming that the individual's responsibility can and must be motivated.

The combination of the sustainability concept's abstract notion of responsibility for future generations and the experts' uncertainty about the actual consequences of global warming form a fertile base for psychological barriers, i.e. for ideas that block our actions in relation to the environment, and more particularly the climate. Thus the trait common to psychological barriers is that they reflect a feeling of paralysis and powerlessness.

This powerlessness can be expressed in different types of blocking notions or psychological barriers.

Three psychological barriers arising primarily as an expression of powerlessness are mapped out below: *(1) fatalism (or belief in destiny)*, understood as a negative view of human nature reflected in a distrust of political decisions and control instruments in the environmental field; *(2) the*

*insignificance complex*, expressing uncertainty about one's own efforts; and *(3) shortsightedness*, reflective of a repression of future threats and as a reaction to the abstractness of the sustainability concept.

**Fatalism as a barrier**

Fatalism as a potential psychological barrier to motivation for the individual's responsibility refers to the powerlessness of the human being in relation to its own fate. Acceptance of the fatalistic 'dogma' can lead to a failure to act, based on the mindset that there is no point in tempting fate, as this can lead to more harm than good.

In the environmental debate, fatalism is linked first and foremost to the interpretation of nature as capricious and 'autonomous'. The fact that nature is capricious can be interpreted along two lines: partly as an expression of nature being completely and utterly beyond the sway of human activities, partly as a reflection that nature may well be subject to the influence of human activities, but as an organism is so complex and unpredictable in its own right that to talk about "controlling" it makes no sense. Where the former interpretation can be used to argue against deploying initiatives in the climate field because it is economically inexpedient to believe that one can make any difference to the environment, the latter interpretation leads more in the direction of out-and-out powerlessness. Both instances involve fatalism as a pitfall to the individual's faith in the economic and political instruments available in the field of the environment and, especially, the climate.

Observing the climate debate, as depicted in the Danish and international media, fatalism is poised like a potential pitfall at either extreme of the debate on the part of both climate sceptics and climate advocates. Sceptics arguing that there is no scientific evidence for speaking of a correlation between global warming and human activity very often represent fatalism (consciously or unconsciously). This shows up in some people as distrust and rejection of the alleged noble intentions underlying the notion of sustainability. They accuse it of being a cover for pure political or economic power interests, potentially capable of preventing priority being given to problems that human beings can actually do something about. Thus we find, as a foil to Al Gore's documentary film *An Inconvenient Truth*, the British Channel 4's TV programme *The Great Global Warming Swindle*. The latter pursues a line of argument with the aid of the same graphs as Al

Gore uses, only it denies that global warming is a man-made phenomenon. According to *The Great Global Swindle*, global warming is due solely to the effect of solar activity and increased cosmic radiation. The message is that global warming is a natural process, and that atmospheric carbon dioxide has nothing to do with climate change. On the basis of this, the film criticizes the great focus on reducing carbon dioxide emissions in the atmosphere as inappropriate and maybe even as a block to continued development in the countries of the third world. The initiatives towards carbon dioxide reduction are thus said to take the focus away from other problems in the developing countries, and can therefore indirectly be said to contribute to maintaining problems of diseases and widespread poverty.[23]

Fatalism may altogether be associated with a deep-rooted mistrust of the scope for political endeavour, regardless of whether or not it is felt that the politicians could do something. When, for example, some politicians juxtapose economic necessity (that we must have ever more material prosperity) with ecological necessity (that we must avoid environmental catastrophes that impair that prosperity generally), no one believes it is meant in honesty. This gives rise to suspicion on citizens' part that what these politicians really mean is that economic reality must be the stronger, come what may. When, for example, politicians concede that Denmark must be an ecological leader, people believe that they are only really doing it because they spot an opening for Danish production and sales of organic goods and machinery, e.g. wind turbines.

However, it is important to stress that the scientific studies that investigate other physical explanations of the increased warming are not intended to underpin fatalism per se. Studies and theories about solar activity and cosmic radiation are not necessarily at odds with studies showing a correlation between human activity and global warming. Scientifically, then, it cannot be a case of denying that human activities have a bearing on global warming, but conversely it may involve investigating other sources that can *also* have a bearing on the changes we are witnessing in the climate in current years.

Fatalism only acts as a pitfall and hence as a possible barrier to environmental awareness the moment scientific studies are used in a normative context as an argument for or against a number of particular political strategies for sustainable development.

At the same time, this means that there is a possible, potentially fatalistic pitfall in the front-line soldiers' message about nature's extreme vulnerability and the tendency of debaters like Al Gore to link a long string of natural disasters and social catastrophes with the problem of global warming. In this case the potentially fatalistic pitfall lies in the actual rhetoric used to convey the seriousness of the problem. On the one hand there is an appeal to do something now, and on the other hand the seriousness of the problem is underlined by highlighting that whatever we do right now to limit emissions of greenhouse gases, the global warming process is still set to continue for many decades to come. Fatalism, then, is embodied as a possible pitfall in the actual 'disaster rhetoric'.

This was the very criticism levelled at the British researcher and environmentalist James Lovelock's book *The Revenge of Gaia: Why the Earth is Fighting Back - and How we Can Still Save Humanity*, 2006. Lovelock bases his deliberations on the Gaia theory, which he put forward in the late 1960s. It is a theory that the living and non-living parts of the earth (Greek: *Gaia*) are interconnected and react with feedback mechanisms, so that the earth can be regarded as one self-regulating organism.

According to Lovelock it is already too late to change the development for which humans are to be blamed; and the reaction will occur suddenly and unexpectedly, because the earth's ecosystems do not react linearly in step with the increased stress but, on the contrary, accumulate until a threshold value is exceeded – rather like the 'straw that breaks the camel's back'. The result of Lovelock's interpretation of existing environmental problems is precisely a negative and counterproductive fatalism, which can have a demotivating effect on any initiative to take ethical responsibility for sustainable development and is therefore met with scepticism and criticism by other environmentalists despite them fighting, in principle, on the same side as Lovelock himself.[24]

The problem is that Lovelock's message risks turning into a self-fulfilling prophecy, because people give up hope, and instead of making an effort, let matters take their course. Fatalism as a barrier thus becomes destructive to humanity; it counteracts the optimism concerning our capabilities, as reflected in human nature's striving for knowledge and constant development of new technologies for the benefit of sustainable development.

In the individual, fatalism can be reflected as a barrier in connection with the individual's reaction to the different messages in the debate,

irrespective of whether these come from environmental sceptics who feel that committing to the cause of a good environment is not worth the effort, or environmental experts who are fighting for the environmental cause. The sceptics' message about a critical attitude and not putting all one's eggs in the global warming basket is not a message that we should simply leave things to chance per se. But the message does risk leading to fatalism the instant it is used as a pretext for complacency, based on the mindset that "if the experts can't even agree, is there even anything to it?" The front-liner's message is a call for proactiveness at both the individual and the collective level, but the message to act quickly and stake everything in order to have any hope whatsoever of being able to slow down the development also risks leading to fatalism, based on the mindset that: "It's already too late, I can't do anything, it's all going to end badly anyway."

As a barrier, fatalism undermines the commitment to sustainable development and the notion inherent to it that there is any point in people jointly attempting to change that development in a desirable direction.

In terms of overcoming fatalism as a barrier, therefore, it is not just a case of keeping an optimistic view of human nature by focusing on what the individual and the community can do and have already proved capable of; it is also a case of the individual's faith and trust in both his own and the collective effort being undermined in the event of citizens experiencing 'cross-pressure', which in political terms will result in a commitment to sustainability and specific strategies in one context being contradicted by political decisions or strategies in another.

**The insignificance complex as a barrier**

The insignificance complex is a barrier connected primarily with the experience and perception of powerlessness when the individual is presented with global warming as an overwhelming environmental problem. The abstract nature of global warming and the physical barriers associated with it can in themselves create the insignificance complex as a mental barrier. But it can also be difficult to see the meaningfulness of one's own efforts when global warming is the cumulation of human activities over a long period of time. The will and the awareness may well be present, without having access to the hands-on experience that can bolster the conviction that "my efforts can make a difference".

The insignificance complex differs from fatalism in as far as the perception of insignificance does not exclude the view that people collectively can make a difference per se. The insignificance complex is probably the most common psychological barrier, therefore. The 'short-circuit' that leads to the insignificance complex is down to the individual failing to connect his or her own efforts to those of the community.

Thus the insignificance complex can very easily become an excuse or a pretext for complacency, because it is easy to shrug off the unpleasant feeling of powerlessness with reference to the need for political effort. Furthermore, the physical barriers of global warming, together with the abstract nature of the concept of sustainability, make it difficult for the individual to position himself and his own efforts within the problem complex. Instead, it is easier to react with the attitude: "Why should I do anything unless everyone else is doing it?"

The insignificance complex functions particularly as a psychological barrier, tying in with that part of the arguments in the climate debate that insists the climate problem can be solved by public regulation or by market mechanisms, as well as clinging to a trust in the fact that the human being has a certain margin with regard to dynamism and freedom of action in relation to nature. Unlike fatalism, the insignificance complex does not bear any distinct kinship with a particular view of humankind or nature. Rather, it is a mystification, making inferences from the individual's insignificance to the insignificance of common actions. The complex can best be described as a psychological barrier that can arise in the individual's consciousness as an immediate reaction to his or her feeling of powerlessness, attaching predominantly to the understanding of nature as tolerant or benign.

The insignificance complex, in other words, is an expression of a *short-circuit* in the individual's consciousness in the form of a failure to make a connection between 'my own effort' and the collective effort; it is not a general dismissal of the benefit of acting in relation to existing environmental problems, as is the case with the fatalism barrier.

Looking at the Eurobarometer Survey from 2007, it clearly emerges that a preponderant majority of citizens feel that efforts to combat the development of global warming must above all be made by regulating energy generation and consumption, as stipulated at the EU level. No less than 62% of those asked replied that they preferred regulation at EU rather than

national level, and 65% felt that the EU is better placed to negotiate energy production and prices for all member states than these states individually, while 26% preferred this to be done at national level. In Denmark, the aforementioned study conducted by *Mandag Morgen* [Monday Morning] points in the same direction too – that people do not just envisage making individual savings but expect some political effort.[25]

The relationship between regulation at political level and individual acknowledgement of personal responsibility to make some effort towards solving the climate problem is a subtle one, and extremely dependent on public effort.[26] If public effort in the environmental field is high, the individual's concern drops off as an expression of confidence in the fact that whatever is necessary is already being done at a collective level. Conversely, political regulation cannot be effectively implemented if there is no popular support for it. Popular support requires the individual to have consciousness and concern for the environment and recognizes the necessity of taking responsibility for sustainable development in terms of the climate problem.[27]

On the one hand, powerful public governance within the field of the environment implies a risk of this becoming the individual's *pretext for doing nothing*, in the sense that individual action seems unnecessary. On the other hand, overemphasizing the individual effort risks giving the individual a feeling of powerlessness, because he or she does not see the effect of that individual action linked to a collective effort. In the latter's pitfall, the question of willingness to 'relinquish' plays a pivotal role. One of the problems with the individual's motivation to act on his consciousness regarding personal responsibility is precisely the willingness to 'relinquish'.

In the book *Cool It*, the critical debater and statistician Bjørn Lomborg concludes that the point is to reverse political regulation with regard to the climate problem and the question of 'adaptation' to sustainable development towards 'doing good' rather than doing what 'feels good'.[28] He criticizes the present political commitment to a new and intensified agreement on carbon dioxide emissions as a substitute for the Kyoto Protocol for being economically inappropriate and out of proportion to the difference such agreements are genuinely capable of making on the climate issue. He describes the existing climate debate as hysterical and unilaterally biased towards public commitment to reducing the production and emission of carbon dioxide. He argues that, instead, economic initiatives must target

research into alternative energy forms, while at the same time he craves a critical approach to the debate's focus on 'the doomsday rhetoric that makes global warming out to be the biggest problem for the human being'.

Lomborg's criticism has an eye for the fact that inherent in the 'doomsday rhetoric' is a potential pitfall in the form of *fatalism* as a barrier. However, in his appeal for a "cool overview" there lurks a barrier to the *insignificance complex* potentially, because the focus is taken away from environmental awareness in favour of purely political and economic control. In an argument like Lomborg's, individual effort has been rendered entirely insignificant in this context. The essential thing here seems to be not that the individual is acting eco-consciously, but on the contrary that solutions exist, which call for neither relinquishment nor any necessary effort on the part of the individual. In so doing, an argument like Lomborg's has a tendency to overlook the essential nature and effect of making an effort to combat global warming that lies in activating people's consciousness and environmental concern, and in that way altering both the individual and the collective pattern of action in the long term. Focusing on the mechanism of purely economic regulation removes attention from a factor central to the question of sustainable development, i.e. the appeal for and activation of individual as well as social values.

As a barrier, the insignificance complex is both about powerlessness in the individual's abilities, viewed in relation to public control, and about distance in the relationship between the individual's behaviour and public control, which in itself seems to render individual effort insignificant and unnecessary.

The challenge therefore, lies in giving meaning to the individual's participation in the effort to combat global warming. The relationship between individual environmental awareness and the influence of the motivation to act on the collective effort must be brought home, so that the individual does not succumb to the danger of entrusting that effort to public control or to maintaining his lifestyle based on the conviction that "my personal behaviour doesn't make a blind bit of difference in the overall scheme of things anyway."

It is not enough to stake a certain amount on developing alternative or renewable energy if the population does not simultaneously demand alternatives to the existing energy sources as part of its contribution to making a long-term effort. That demand depends on raising the individual's

awareness about the need to modify behaviour both individually and collectively. Such a change in behaviour does not take place overnight, but presupposes a high level of knowledge about environmental problems coupled with reflection on social and individual ethical values.

**Shortsightedness as a barrier**

Shortsightedness is a mental barrier that relates to the actual concept of 'sustainable development' and as such is not peculiar to the climate debate. But shortsightedness involves a fundamental psychological barrier that is central to both the climate debate and the environmental and biotechnological debate. Shortsightedness occurs as a lack of awareness that leaving things to chance or leaving action to others is also a choice that will have consequences for the future.

Shortsightedness occurs as a barrier in two respects. For one thing, it can be a barrier in terms of the ability to connect the local and the global perspective and, for another, in terms of the ability to connect the ethical responsibility for one's fellow human beings to an ethical responsibility for future generations, which is at the heart of the actual notion of sustainability.

Since the 'Brundtland Report' focused on the concept of sustainability in 1987,[29] there have been many initiatives aimed at involving citizens locally in environmental projects, with an eye to engaging and informing them, and giving them the experience of being able to do something for a better environment themselves. The experience from Denmark shows that a large number of these projects appear to have been successful in terms of involving and promoting local citizens' commitment as well as personal experience and awareness around the need for such individual or local efforts, and the benefits. However, the effect of such projects is questionable in terms of what the actual concept of sustainability embraces. The local projects are defined locally, and there is often an inability to relate them to the global perspective, thereby limiting the individual's effort for sustainable development to whatever the local citizens themselves feel like.[30] The projects have focused not on debate, but rather on local cooperation. Consequently, an important linkage has been lost in the attempt to recruit the population to the idea of sustainable development, since the debate itself is the very arena where the axiomatic dilemmas arising in the encounter between different views of nature and human being are expressed.

Shortsightedness is a genuine barrier the moment it becomes a pretext for doing nothing in the form of being content to make an effort when it fits into one's everyday schedule rather than retaining a consistent environmentally conscious pattern of action. Similarly, shortsightedness is a barrier the moment local commitment is not framed within a meaningful setting. Shortsightedness is thus a challenge to the actual idea of sustainable development more than it is a barrier to the individual's motivation to act. It is therefore a matter of getting the individual to realize partly that 'my efforts' affect others' actions, just as others' actions or lack of the same affect my actions, and partly that choosing 'not to act' is also a choice with consequences for people other than 'myself'.

The Brundtland Report, in which the principle of sustainability was first made the theme of a major exposition, describes the concept as:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[31]

In other words, sustainable development is about managing the future without delay. It concerns politicians and business leaders alike, of course, and is at the core of the current debate on "corporate social responsibility",[32] but it also concerns the individual, who acknowledges his or her responsibility for the future.

However, the concept of sustainability is an equivocal ideal that requires interpretation and concretization, i.e. it forms part of a learning *process*. It is partly an attempt to formulate a relationship between humans and nature, in the sense that the environment and nature are acknowledged as something more than just a purely economic asset. And it is partly an attempt to formulate a long-term ethics, in which ethical consideration for the 'other person' extends beyond the specific fellow human being to embrace posterity for an unlimited future.

This ethics is inherent in the Brundtland Report's question about what future generations will think of us if we are not mindful of them today and safeguard sustainable development: "They may damn us for our spendthrift ways"[33] and "Our failure to do so [safeguard sustainable development] will not be forgiven by future generations".[34] The question is, what sort of posthumous write-up will posterity give us if we bequeath to them a world that has been destroyed? Our legacy will be a poor one. Conversely, lending consideration to the needs of future generations will give us a good reputation and hence a human communality extending into the future.

Certainly, the idea of ethical consideration for future generations is abstract, just as the concept of sustainability is abstract per se. After all, there is no specific fellow human being who can appeal to our ethical responsibility and whom we can give a good life.

In order to overcome shortsightedness as a barrier to acknowledging ethical responsibility vis-à-vis future generations, therefore, it is necessary to focus on the relationship between past, present and future, and emphasize the historical awareness of what we have taken over from previous generations. For just as future generations are set to take over a world from us, we are the successors of previous generations and have taken over a world from them. It is therefore a case of individuals coming to realize right now that both the environmental and the social problems as well as the technological possibilities currently confronting us are an expression of actions and decisions made by others. In other words, when faced with shortsightedness as a barrier to acknowledging ethical responsibility for life with and within nature, both now and in the future, it is necessary to focus on the individual's concrete experience of life with and within nature as well as on the cultural and historical context that informs us about our reliance on one another down through the succession of generations.

In this account we have focused on the *psychological barriers* that can materialize in the relationship between the climate problem, as facilitated and conveyed in expert statements, reports from the UN climate panel and in the media-borne climate debate in general. In other words, this is not an exhaustive description of the individually oriented barriers, which relate to both the category of structural barriers and the category of psychological barriers. Whereas the psychological barriers are connected with the individual's experience and personal opinion-shaping in the encounter with the debate conveyed in the media, the structural barriers are more pragmatically oriented in nature. The structural barriers thus relate to the way our everyday lives are structured, partly by social regulatory measures, partly by personal priorities and values. In order to create a holistic view of the barriers blocking environmental and climate awareness and inhibiting the motivation for proactive initiatives, there is another challenge, then, which consists of localizing and mapping both the structural barriers' mechanisms and their relationship with the psychological barriers described here.

CHAPTER 6

# THE WAY FORWARD

The aim of this 'philosophical introduction' to an examination of the barriers to climate awareness has been to contribute to a sensible and sober way of talking about these barriers, so that this form of expression and line of thought can be incorporated into the various forms of administrative and political initiatives, different research projects and the requisite educational drive in day-care institutions, schools and adult education settings. In so doing, we hope to be conducive in helping the battle for the climate to achieve its goal, which must be to have environmental and climate debate awareness translated into action by – in Søren Kierkegaard's words – finding the individual where he or she is, "and begin there".

We have directed our focus on two forms of barrier, which we have called the physical and the psychological barriers, respectively.

As regards the physical barriers – invisibility, complexity and imperceptibility – we have analyzed them as factors and processes which, both in nature and in human cognition, block normal people's scope for understanding the physical reality they live in. Using these analyses of the way such blocks take place, the individual should be able to find help in realizing that they are not due to a lack of willingness or to stupidity, but are part and parcel of the basic human conditions for acknowledging many environmental processes, particularly in the field of climate. This should make it possible to avoid allowing these barriers to lead to powerlessness and passivity. They cannot be eliminated, but nor can they impede our battle for a better environment and the fight to stop climatic degradation.

In dealing with the physical barriers, what is needed is information and more information, so that we can learn to live with them and avoid them due to our foresight.

As far as the psychological barriers are concerned, they can be harder to spot, albeit easier to fight also, once their depths have been fathomed, as they are pure phenomena of consciousness and a kind of false consciousness to boot. Often, they undoubtedly work in an unconscious way, in that we are so caught up in them that we do not spot them, just as it sometimes

happens that we 'cannot find the glasses we are wearing'. These are pitfalls we fall into, because our thoughts short-circuit or because, we reason on the basis of ideologies about ourselves and our relationship with nature, or simply because we think too shortsightedly.

Since our aim, above all, is to temper the debate on the climate issue, we do not make do with analyzing them; we also fight them with rebuttals.

*In dealing with the insignificance complex*, it must be clear that a short-circuit takes place from the very limited scope of the isolated person to a collective powerlessness. The fallacy consists of assuming that a union of helpless individuals must also be helpless itself. As with the individual, it is fallacious to assume that Denmark is too small a country to be of any significance for the environmental development of the globe. There is no reason to assume that e.g. Denmark and Europe will eventually be alone in the world with their environmental policy, although the governments of the USA and China tried to turn a blind eye to climate problems for a long time. This was due partly to the growing desire among the population of these countries for a new environmental accountability, and partly to the fact that the development of environmental accountability in other countries could not help but influence the big, sluggish countries in the long run.

We must demonstrate that each of us individually is only insignificant if we forget that we live off our communality with others.

*In dealing with fatalism*, it goes without saying that the possibility of doing something needs to be stated. At the end of *An Inconvenient Truth* Al Gore gives a good example of the international community being able to do something to improve the environment, referring to the reduction in CFC gases that was to blame for an expanding hole in the ozone layer, accomplished by 27 countries, headed by the USA since 1987.[35] This example is important in order to strengthen anti-fatalism. But it may be felt that greenhouse gases represent a far greater problem, with even greater economic interests at stake, and hence that the same success will not be achievable in regulating their use.

Consequently, other and more in-depth ways of puncturing fatalism are needed – for, as we have tried to show, it is not a knowledge but a pessimistic philosophy of life – and this can only be to develop an awareness that

the denial of humankind's scope for taking action is a mystification. This hinges not merely on a fallacy that infers collective powerlessness from the isolated person's powerlessness, but on an untenable view of humankind (that human beings are predestined to do what they do); its metaphysical determinism, which is an assertion that no human is capable of doing anything novel, is absurd, because in that case all human creativity becomes incomprehensible and pointless.

However, it is no mistake to focus on the individual. On the contrary, if the Kierkegaardian focus on 'the individual' is abandoned, clinging to the idea that collective action is needed, any appeal for collective action will very easily be perceived as authoritarian and as an assault on the individual's self-determination. Therefore, everyone who speaks about environmental problems in the public space must learn in the same breath to talk about the individual's responsibility and collective possibilities. Such collective possibilities do not exist without the individual's responsibility, and vice versa.

To this can be added a puncturing of economic fatalism, which consists of believing that economics is an anonymous values system that no one can touch. This opinion, if anything, is a false consciousness.

Economics has been created completely and entirely by humans, and is still being so. But there is something qualitative in the world which is above any pricing, i.e. beyond any economic valuation or appraisal. Thus, we cannot put a financial price on an environment or a nature that provides us with the conditions necessary for existence and benefits. We cannot exchange this nature for anything else, i.e. this nature has no economic value per se; and our choice of how we intend to relate to that nature, and to what extent we intend to take care of it, determines what else is of value, including our economy.

We cannot exchange a good climate for a poorer one without suffering as a result and, at worst, dying from it. Many individual things can be substituted and replaced, but nature itself is irreplaceable to at least as great a degree as another human being. Indeed, it may even be said that at a social level we are better able to tolerate the loss of another human being than the loss of the natural environment, which sustains life for us all. In this way the environment can be even more irreplaceable than another human being. And since, in the final analysis, all our ethics must be about caring for the irreplaceable; there can be no interpersonal ethics in our time that is

not also an ethics of the environment and an ethics of nature. Or it may be said that the ethics of reciprocal caring for one another cannot exist without being extended to make an ethics for sustainability in both the short and the long term in our actions relative to nature.

*When dealing with shortsightedness*, we need to keep uppermost the notion of and the need for a good posthumous reputation which was central to the Brundtland Report on sustainability. The desire for a good reputation forms part of a long-term ethics of sustainability, which aims beyond the life course of the individual and, in its care of the irreplaceable, also looks at what is irreplaceable for 'my' successors for an unlimited future. Thus, we act in relation to the recognition our successors will give us, and that means that it is not just pioneering scientists, landmark politicians, and great authors and thinkers who assure our reputation, but anyone who acts responsibly in terms of our posterity. The reputation that those of us alive today will have depends on all of us who are alive now, both individually and collectively; it expresses our link with the future, and what we have been willing to give those who come after us.

This attitude towards our successors can scarcely take on a specific meaning for us, however, if we do not have an awareness of our predecessors' reputation for us, i.e. about what we owe those from whom we have taken over our society and culture, who have preserved some piece of magnificent scenery (e.g. an old oak tree) for us. Therefore, historical consciousness, which implies a consciousness of our responsibility for the future, derives its meaningfulness from our acknowledgement of our dependence on the past. Shortsightedness must be broken both in relation to the past and in relation to the future.

With this investigation, our wish has been to contribute to a sober debate on the climate issue. We have sought to distance ourselves from both the "doomsday rhetoric" and the cold scepticism.

We have been at pains to help enable the individual to face up to climate problems seriously without succumbing to a sense of doom and thus also to provide politicians, administrators and teachers of every kind who seek to arouse a sense of responsible climate awareness with a temperate language.

For this very reason, we have pointed to the necessity for an ethics of sustainability. This needs, on the one hand, to maintain a high ideal, which

together with some of the most important sociologists and philosophers of our time can be articulated as the ideal of living as a world citizen, and on the other hand it has to emphasize the small advances we can make, or the retrograde steps we can prevent. There is no inherent contradiction in this. The cosmopolitan ideal is a splendid ideal, "and it makes no odds that we are not immediately able to realize it", as the philosopher Immanuel Kant said.[36]

The climate issue, of all issues, lends extreme topicality to the notion of the world citizen: being a world citizen or 'cosmopolitan' involves that national outlook – of which Ulrich Beck speaks,[37] for example – not being placed in opposition to what he calls the cosmopolitan outlook. The world citizen must not be played out against the national citizen, but global thinking and acting (particularly for the benefit of health, the environment and climate) must be a protection of individual, local and national life.

Once a very abstract conception of an ideal human community, the notion of world citizen has now taken on entirely concrete shape by being about, inter alia, how we are to achieve sustainable development for all those who are citizens of the human world.[38] Right now, that means that we humans are unified in a care for our natural physical life in the environment, which extends across and beyond all national borders and far into the future.

During the past ten years, a rapidly growing body of literature on world citizenship has come into evidence. In this context there is increased research into non-state actors such as multinational companies and non-governmental organizations (NGOs), and much is being written about the new world order in the sense of international law,[39] yet to date much of this debate has had only a minimal association with the climate problem. More research and reflection in this field is required, therefore; and responsibility for the climate must not assume importance for ethics alone, i.e. for realization of a good life, but also for the societal framework for this life, i.e. for law and order, both nationally and transnationally.

As world citizens we see that we are living in a local space that does not exist without the global space, but we also recognize that the world as a whole, i.e. humankind as a whole, is conditioned by the many individual, local and national forms of initiative designed to reinforce and protect any one specific life. Thus, it is through the individual's commitment and practical effort that we preserve a natural environment and a globe that offer

good living conditions for one another and for future generations. The battle for the climate therefore belongs with the battle for a world unified in world citizenship.

Marx said: "The philosophers have only interpreted the world, in various ways. The point, however, is to change it!"

Today we have to say: So far the world citizen has just been a figure for interpreting the world with. Now he has become an interpretation with which we can transform the world!

# Notes

1 Søren Kierkegaard: *Synspunktet for min Forfatter-Virksomhed, En ligefrem Meddelelse, Rapport til Historien*, Copenhagen, 1859, *The point of view on my work as an author, trans*. Howatd V. Hong and Edna H. Hong, Princeton University Press, Princetron: 1998, Part Two,, Chapter 1, para. 2., p. 45

2 Most recently e.g. Chris Goodall: *How to live a low-carbon life, the individual's guide to stopping climate change*, Earthscan, London, 2007.

3 Christoph Baumgartner: *Umweltethik – Umwelthandlen:* ein Beitrag zur Lösung des Motivationsproblems, Mentis, Paderborn, 2005.

4 Christoph Baumgartner: *Umweltethik – Umwelthandlen*, p. 88.

5 IPCC Fourth Assessment Report (AR4) *Climate Change 2007.* In notes, making reference to the UN climate panel's 2007 report, the title of the sub-report referred to is given. The full references to the summarized report and the three sub-reports, respectively, are set out in the bibliography.

6 Just as the debate surrounding global warming is not new per se, though nor does it involve the sudden emergence of a new phenomenon in the consciousness of the population. Rather, it involves an increased awareness compared to a few years ago as confirmed by Danish surveys of citizens' knowledge of and attitude to global warming.

7 The surveys were conducted by the research institute Zapera, which collected 1,011 replies from Danes aged between 15 and 75. The survey in November 2005 was designed by Explora in association with the Danish Environmental Protection Agency (EPA). The survey conducted by the independent Think-Tank *Mandag Morgen* [Monday Morning] in February 2007 is a survey of the attitudinal conditions for a 'popular movement for the climate cause', which *Mandag Morgen* compiled for the Danish Ministry of the Environment to coincide with the launch of the campaign '1 tonne less'. See: Working report from the EPA – The population's knowledge, attitudes and behaviours in relation to the climate issue, 14/2006, as well as "1 ton mindre – De holdningsmæssige forudsætninger for klimasagens folkebevægelse" [1 tonne less – attitudinal conditions for a popular movement for the climate cause], in *Mandag Morgen. Nyhedernes Tænketank* [Monday Morning Think Tank of News], February 2007.

8 The principal results of the Eurobarometer survey 206a, *Attitudes on Issues related to EU Energy Policy*, were presented in a press release from the European Commission dated 5 March 2007, ref. IP/07/280. Both the press release and the actual Eurobarometer survey can be accessed on the Internet.
The report is available at: http://ec.Europe.eu/public_opinion/ (Look under Flash EB report 206a).

9 The survey was undertaken in February 2007 and published in March 2007. Johanna Wolf, Irene Lorenzoni and Roger Few, Tyndall Centre for Climat Change Research and School of Development Studies, University of East Anglia, Norwich, UK. The research referred to here was presented in the article, "Conceptual and practical barriers to adaptation: An interdisciplinary analysis of vulnerability and adaptation to heat waves in the UK". In the lecture compendium: "Living with climate change: Are there limits to adaptation?", Royal Geographical Society, London, 7-8 February 2008, pp. 101-111

10 Niklas Luhmann: *Ökologische Kommunikation – Kann die moderne Gesellschaft sich auf ökologische Gefährdungen einstellen?* (1986), Westdeutscher Verlag, Opladen, 1990. *Ecological Communication*, trans. and intro. John Bednarz. Cambridge: Polity, 1989, Chap. 6.

11 This originally appeared in 1986 in German as "Risikogesellschaft" and has been translated into English (*Risk Society*, London, Sage,1992). Beck distinguishes between risk, dangers and wide-ranging dangers, but operates with a risk concept that has some of the same components as the Luhmannian risk concept. For a more detailed discussion of the relationship between, and the understanding of risk and danger in the social theories of Luhmann and Beck, respectively. See Klaus Rasborg's article *Sikkerhed, fare, risiko – et forsøg på en afklaring af det sociologiske risikobegreb*, pp. 17-39, in: Kurt Aagaard Nielsen, Finn Hansson and Klaus Rasborg (ed.): *Risiko, politik og miljø i det moderne samfund – en antologi om en aktuel kontrovers*, Forlaget Sociologi, Copenhagen, 1999. [Risk, Politics & Environment in Modern Society – An Anthology on Current Controversies].

12 See Luhmann, Niklas: *Risk: A Sociological Theory*. (Rhodes Barrett, trans.) Berlin/New York: Walter de Gruyter, 1993 [*Soziologie des Risikos*, Berlin/New York 1991].

13 The degree of uncertainty and certainty is 'translated' into a special terminology, which reflects a chart from 0 to 100%, at intervals, indicating the framework of probability within a given evaluation is located (AR4, p. 1 and note 2 and Workgroup 1. Summary for policy makers, p. 3, incl. note 6).

14 The Danish folk high schools are based on ideas of the educator N.F.S. Grundtvig formulated in a programme from 1844 by Christian Flor saying that "peasants and burghers can receive such knowledge and skills as can be of use and for pleasure, not so much with regard to the individual's particular occupation and business as to his position as a son of the nation and a citizen of the state" (quoted by Roar Skovman in "Grundtvig and the Folk High School Movement" in *N.F.S. Grundtvig. Tradition and Renewal*, edited by Christian Thodberg and Anders Pontoppidan Thyssen, trans. by Edward Broadbridge, Det Danske Selskab, Copenhagen, 1983, p. 424.

15 Michiel Schwarz and Michael Thompson (1990): *Divided we stand – redefining politics, technology and social choice*, Harvester Wheatsheaf, Exeter, UK.

16 The four myths of nature described in the text refer to what Schwarz and Thompson describe as: Nature Benign, Nature Capricious, Nature Perverse/Tolerant and Nature Ephemeral.

17 Michiel Schwarz and Michael Thompson: *Divided We Stand – Redefining Politics, Technology and Social Choice*, pp. 4-5.

18 Adger, Dessai, Goulden, Hulme, Lorenzoni, Nelson, Naess, Wolf, Wreford: "What do we know about limits and barriers to adaptation to climate change? A background paper". In the lecture compendium: Adger, Neil et al. (eds): *Living with Climate Change: Are there limits to adaptation?* Royal Geographical Society, London, 7-8 February 2008, p. 4.

19 Jeppe Læssøe: *Veje videre frem for folkelig deltagelse og bæredygtighed* [Way towards Public Participation & Sustainability], Danish University of Education, Outline for a Nordic conference on sustainable development, Oslo, October 2006.

20 Læssøe, Jeppe: *Veje videre frem for folkelig deltagelse og bæredygtighed*.

21 This is Bjørn Lomborg's message in his latest book: *Cool it, The Skeptical Environmentalist's Guide to Global Warming*, Cyan, Marshall Cavendish Editions, London 2007, p. 28 ff.

22 Jeppe Læssøe and Trine Iversen: *Natur i hverdagslivet*, manuscript, p. 10, printed in: Agger et al. (ed.) *Naturens værdi*, Gad, Copenhagen, 2002, pp. 251-268.

23 www.channel4.com (See under *The Great Global Swindle*, 'The programme' and 'The arguments').

24 Michael Mccarthy: "Why Gaia is wreaking revenge on our abuse of the environment", The Independent, 16 January, 2006. reproduced in the Danish newspaper *Information*, "Vi kan ikke være sikre på Gaias hævn", translated by Ebbe Rosander, 20 January 2006. See www.information.dk.

25 "The debate about the cause and reality of climate change has thus been crucial. The majority of Danes have endorsed the diagnosis made by the UN climate panel. Without this, there would have been no resonance for modified standards and behaviours in the climate cause. But the debate has been had, the majority has concluded, and the willingness to change behaviour is considerable. Whether or not it happens depends largely on whether the population is given the desired knowledge about the potential courses of action open to the individual. If it does happen, the politicians must bargain with the consequences. People have not envisaged just saving individually and leaving it at that. 78 percent agree and 52 percent even agree entirely that if they themselves make an effort and cut their personal carbon dioxide emissions, then they expect the politicians to also redouble their effort to reduce Denmark's carbon dioxide emissions, see "1 ton mindre – De holdningsmæssige forudsætninger for klimasagens folkebevægelse" [1 tonne less – attitudinal conditions for a popular movement for the climate cause], in *Mandag Morgen. Nyhedernes Tænketank* [Monday Morning Think Tank of News], February 2007. (Refers to ZAPERA's survey from 2006).

26 Jeppe Læssøe: *Veje videre frem for folkelig deltagelse og bæredygtighed*, Danish University of Education, October 2006.

27 For a more detailed examination of the relationship between public initiatives and popular concern about environmental problems, see Jesper Læssøe: *Veje videre frem for folkelig deltagelse og bæredygtighed*, ch. 2, where Læssøe examines a number of mechanisms and changes in the populations' attitude and concerns for the environment that have become evident in Norway, Denmark and Sweden through the 1990s down to the present day.

28 Bjørn Lomborg: *Cool It*, p. 52, 161-164.

29 World Commission on Environment and Development: *Our Common Future*, Oxford University Press, 1987.

30 Jeppe Læssøe: *Veje videre frem for folkelig deltagelse og bæredygtighed*, pp. 19-20.

31 World Commission on Environment and Development: *Our Common Future*, Oxford University Press, 1987, Chap. 2, p. 43.

32 William R Blackburn: *The Sustainability Handbook, The Complete Management Guide to Achieving Social, Economic and Environmental Responsibility*, Earthscan, London, UK, Sterling, USA, 2007, p. 5 sq.

33 *Our Common Future*, Introduction, p. 8.

34 *Op. cit.*, Chap. 6, p. 166.

35 Al Gore: *An Inconvenient Truth*, Aschehoug, Penguin, NY, USA, 2007.

36 Immanuel Kant: *Über Pädagogik* (1803), *Werke in sechs Bänden*, VI. Frankfurt am Main: Insel Verlag, Frankfurt am Main. 1964, p. 700. *Kant on Education*. Trans. Annette Churton (1899). Bristol, UK: Thoemmes Press, 1992, p. 8.

37 Ulrich Beck: *Macht und Gegenmacht im globalen Zeitalter. Nueu welpolitische Ökonomie*. Frankfurt am Main: Suhrkamp Verlag, Edition Zweite Moderne, 2002, p. 56. *Power in the Global Age: A New Global Political Economy*. Trans. Kathleen Cross. London: Polity Press, 2005, p. 26.

38 Peter Kemp: *Verdensborgeren som pædagogisk ideal*, Hans Reitzel, Copenhagen, 2005. Forthcoming English trans. by Russell Dees: *Citizen of the World, A cosmopolitan ideal for the 21st century*, Humanity Books/ Prometheus Books, New York. Chap. 3.

39 Peter Kemp and Frederik Rosén: *Den nye verdensorden*, Report to the Danish Ministry of Foreign Affairs, Forlaget Politisk Revy, Copenhagen, 2007. English translation by the Ministry of Foreign Affairs: *The new World Order*, 2006, Forthcoming LIT Verlag, Berlin.

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