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Original article

The barriers to climate awareness[1]

Las barreras a la toma de conciencia del problema del clima

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Abstract

Climate change is a global environmental problem that is directly influenced by human activity. Yet, environmental awareness, is not reflected in our actions, and the environmentally harmful actions we know not to do, we tend to do anyway. In this paper we provide a philosophical analysis of the cognitive barriers that may block the individual citizen's acknowledgement of a personal responsibility to engage in climate responsible behaviour. We distinguish between two types of cognitive barriers; the physical barriers, that are associated with the way we gain knowledge about climate change and the physical world state; and the psychological barriers, that arise from ideas about ourselves and the nature that surrounds us. Finally, we discuss the climate problem in light of the idea of the world citizen and the ethics of sustainability, and we argue that the interconnectedness between the individual and the collective contribution must be emphasized to show how humankind as a whole is conditioned by the many individual, local, and national forms of initiatives.

Keywords: Climate change; Cognitive barriers; Ethical responsibility; Worldviews; Sustainability

[1] This paper is an updated revision of our previous publication from 2009: Kemp, P. and Witthøfft Nielsen, L. (2009). *The barriers to climate awareness. A report on the ethics of sustainability.* **Copenhagen:** Ministry of Climate and Energy. It is developed on basis of a keynote speech "How to break the barriers to climate awareness" given by Peter Kemp at the International Symposium on Bridging the Great Philosophical Divides. Philosophies in Dialogue. Bangkok March 28, 2015. This revision focus primarily on the psychological barriers. A more developed outline of the both the physical and psychological barriers can be found in our publication from 2009.

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Resumen

El cambio climático es un problema ambiental global influenciado directamente por la actividad humana. A pesar de la concientización ambiental y del conocimiento respecto a las acciones perjudiciales que debemos evitar, tendemos a continuar practicando tales conductas. En este documento, exponemos un análisis filosófico de las barreras cognitivas que podrían bloquear el reconocimiento individual del ciudadano con respecto a la práctica de comportamientos responsables con el medio ambiente. Distinguimos dos tipos de barreras cognitivas: las físicas, asociadas a la forma en la que nos informamos del cambio climático y la situación del mundo físico, y las psicológicas, que se derivan de ideas acerca de nosotros mismos y la naturaleza que nos rodea. Por último, analizamos el problema climático a la luz de la idea del "ciudadano del mundo" y la ética de la sustentabilidad, y argumentamos que debe hacerse énfasis en la interconectividad entre el individuo y la colectividad, para demostrar que la humanidad, como un todo, está condicionada por las numerosas iniciativas individuales, locales y nacionales.

Palabras clave: Cambio climático; Barreras cognitivas; Responsabilidad ética; Visiones del mundo; Sustentabilidad

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For several decades, scientists have expressed concerns about the co-relation between anthropogenic greenhouse gas emissions and the observed global warming trend. In 1988, the Intergovernmental Panel on Climate Change (IPCC) was established under the United Nations, with the purpose of providing regular scientific assessments of the state of knowledge on climate change, and its environmental and socio-economic impacts.[2] Shortly after the panel's First Assessment Report (FAR) was published in 1990, the climate problem was put on the international political agenda when the United Nations Framework Convention on Climate Change (UNFCCC) was established in 1992. The UNFCCC's objective is to stabilise the level of greenhouse gas concentration in the atmosphere in order to prevent dangerous anthropogenic impact on the global climate.[3] Scientific knowledge about global warming has increased since then, and now includes more in depth knowledge about the drivers of this trend and the changes it causes to the climate globally and regionally. The latest two reports from the IPCC, Assessment Report 4 (AR4) from

[2] The Intergovernmental Panel on Climate Change. Organization. [Online]. Available at: https://www.ipcc.ch/organization/organization.shtml [accessed 2015, May 11].

[3] United Nations (1992). *United Nations Framework Convention on Climate Change.* United Nations 1992. Preamble and Article 2, Objective. [Online]. Available at: http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf [accessed 2015, November 27].

2007 and Assessment Report 5 (AR5) from 2014, send a clear message to the global society that climate change is a global environmental problem that is largely linked to greenhouse gas emissions.[4] Thus, the panel concludes in AR5 that:

"Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gasses are the highest in history. Recent climate changes have had widespread impacts on human and natural systems."[5]

The IPCC's reports have contributed to establishing climate change as a global environmental problem that needs to be dealt with both internationally and locally. Thanks to the increased media attention to the climate problem following the latest two reports from the IPCC, an ever growing part of the world's population recognise that climate change poses a threat to their living conditions. However, acknowledging the problem is one thing, but recognising the necessity of dealing with it is another. Public support of political initiatives aimed at climate mitigation and adaptation is highly dependent on the individual citizen's acknowledgement of a personal responsibility to make some effort towards solving the climate problem.[6]

We set our focus on the individual's willingness to engage in climate proactive behaviour and the barriers that may stand in the way for his or her ethical awareness in this context. In 2009 we published a philosophical analysis of six barriers to climate awareness, which may block the individual's recognition of an ethical responsibility to contribute to mitigation and adaptation.[7] In this paper we consider these barriers in light of the conclusions from the latest IPCC Fifth Assessment Report of 2014. We distinguish between two categories of barriers; the physical barriers, and the psychological barriers. The physical barriers are barriers blocking acknowledgement of the physical world state. The psychological barriers are the ideas about ourselves and the nature that surrounds us, which block the individual's responsible practice.

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[4] United Nations (1992). *United Nations Framework Convention on Climate Change.* United Nations 1992. Preamble and Article 2, Objective. [Online]. Available at: http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf [accessed 2015, November 27].

[5] See: Observed Changes and Their Causes; 'Summary for Policy Makers' (2014). In: Core Writing Team, R.K. Pachauri and L.A. Meyer (Eds.), *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (p. 2). Geneva: IPCC. [Online]. Available at: https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf [accessed 2015, November 27].

[6] See: "1 ton mindre - de holdningsmœssige forudsœtninger for klimasagens folkebevœgelse" (2007). *Mandag Morgen. Nyhedernes Tænketank* [Monday Morning Think Tank of News], February.

[7] See: Reference under note 1.

First we outline how the awareness barriers represent a type of adaptation constraint, and how problems of knowledge gaps and uncertainty with respect to the impacts and vulnerabilities associated with climate change, can trigger different cognitive barriers associated with the physical nature of the climate problem.

Next we describe how different worldviews and perceptions of nature can impact communication around the climate problem and contribute to trigger psychological barriers in the individual, and have an impact on the willingness to embrace climate proactive lifestyle changes. We discuss how to encourage "the individual" so that he or she can contribute to reduce this threat by adopting behaviours that support a climate sustainable development.

Finally we conclude with some reflections about the relationship between climate awareness and the ethics of sustainability from a broader perspective.

The physical barriers to climate awareness

The convention on climate change was originally developed with mitigation in mind. In recent years, however, adaptation too, has come to play an important role in the effort to prevent the collapse of ecosystems, and to maintain social and economic systems. The convention's website defines adaptation as "changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change."[8]

Many different factors come into play and may constrain or even limit the ability to adapt to climate change. The IPCC's Working Group II mentions knowledge gaps and uncertainty as one of them.[9] The individual's understanding of climate change influences the perception of the risks involved and the need for adaptation.

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[8] See: The United Nations Framework Convention's website, under entrance: `FOCUS: Adaptation. The Adaptation Process'. [Online]. Available at: http://unfccc.int/focus/adaptation/items/6999.php [accessed 2015, November 27].

[9] See: R.J.T. Klein, G.F. Midgley, B.L. Preston, M. Alam, F.G.H. Berkhout, K. Dow and M.R. Shaw (2014). Adaptation opportunities, constraints, and limits. In: C.B. Field, V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea and L.L. White (Eds.). *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Chang*e (pp. 899-943). Cambridge, UK and New York, USA: Cambridge University Press.
Other types of constraints include biophysical constraints, in cases where the physical impact of climate change on the environment is progressing so rapidly that it does not allow adaptation to take place before it is too late. Similarly, the economic costs of adaptation can represent a constraint, as many societies may not have the economic means to establish the necessary measures needed for adaptation.

Educational efforts and tools to promote public awareness about climate change are in place in many countries, as part of a national adaptation strategy.[10] However, the IPCC's working group II's review of adaptation constraints reveals that although more knowledge about climate change may increase public concerns and understanding of the importance of embracing adaptation measures, this is far from always the case. How scientific knowledge and uncertainty is perceived in different cultural settings also plays an important role in adaptation.[11]

How to help people of all ages to translate what one may call their "climate awareness" into proactiveness is not just a matter of supplying more knowledge and tenable theory about the "true state" of the global climate, but is above all the importance of studying 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.

Several constraints, including awareness barriers in the individual, may stand in the way of successful mitigation and adaptation to climate change. The fact of the matter is that the environmental awareness we do have, is not reflected in our actions, and the environmentally harmful actions we know we should not do, we tend to do anyway.

The problem of climate change is a complex one, and the physical nature of it may in itself trigger different types of cognitive barriers, which can be described as physical barriers to climate awareness. These are barriers associated with the way knowledge about climate change is generated and processed. It must be emphasised, however, that adaptation constraints, such as awareness barriers arising from

[10] See for example: Office of Natural Resources and Environmental Policy and Planning (2010). *Thailand's Second National Communication under the United Nations Framework Convention on Climate Change.* Bangkok: Ministry of Natural Resources and Environment. [Online]. Available at: http://unfccc.int/resource/docs/natc/thainc2.pdf [accessed 2015, 11 May 2015]. Or: 'Climate Change Adaptation'. [Online]. Available at: http://en.klimatilpasning.dk/tools.aspx [accessed 2015, 11 May].

[11] See: R.J.T. Klein, G.F. Midgley, B.L. Preston, M. Alam, F.G.H. Berkhout, K. Dow and M.R. Shaw. Chapter 16.3.2. Adaptation opportunities, constraints, and limits (2014). In: C.B. Field, , V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (Eds.), *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 899-943). Cambridge, UK and New York, USA: Cambridge University Press.

problems around knowledge gaps and uncertainty, are not limits to adaptation, but can be overcome.[12]

The awareness barriers associated with the physical nature of climate change are barriers associated with invisibility, complexity and imperceptibility:

Invisibility. 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, complexity forms one of the foundations of scientific investigation. The upshot is that we can never be entirely certain 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 of being inappropriate and not having the desired effect.

Imperceptibility. The physical barriers are also formed 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. The IPCC's Working Group III's contribution to the fifth assessment report of 2014 states that "the significant time lags within the climate system and a focus on short-term outcomes lead many people to believe global warming will have only moderately negative impacts. This view is reinforced because adverse consequences are currently experienced only in some regions of the world or are not easily attributed to climate change."[13] Thus the nature of environmental change is often insidious tak-

[12] For more detail about the types of barriers and the difference between barriers and limits to adaptation see: R.J.T. Klein, G.F. Midgley, B.L. Preston, M. Alam, F.G.H. Berkhout, K. Dow and M.R. Shaw (2014). FAQ 16.1.: Adaptation opportunities, constraints, and limits. In: C.B. Field, V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea and L.L. White (Eds.), Climate Change 2014: *Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 899-943). Cambridge, UK and New York, USA: Cambridge University Press.

[13] See: H. Kunreuther, S. Gupta, V. Bosetti, R. Cooke, V. Dutt, M. Ha-Duong, H. Held, J. Llanes-Regueiro, A. Patt, E. Shittu and E. Weber (2014). 2. Integrated Risk and Uncertainty Assessment of Climate Change Response Policies. In: Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (Eds.). *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the*

ing imperceptibly small steps, which scientists can detect by means of calculations of microscopic changes over time, but which we do not see or feel.

To prevent the physical barriers becoming a constraint to proactive climate awareness, it is necessary to clarify what they consist of and how they are formed. Here a better understanding of the terms governing scientific knowledge in general and of the physical nature of the climate in particular can be very useful. It must also be demonstrated that uncertainty cannot be used as a reason to deny this realization. It may be with good reason, certainly, but an absolute safety net for mistakes does not exist.

The psychological barriers to climate awareness

Even more of an obstacle to proactive climate awareness, are the psychological barriers. According to the IPCC's Working Group III's report of 2014, the extent to which people believe that it is possible to influence the future climate, determines their willingness to support mitigation and adaptation policies. The report states that "In the case of local climate adaptation, psychological variables associated with self-empowerment were found to have played a much larger role in influencing individual behaviour than variables associated with economic and financial ability."[14]

Different worldviews (such as anthropocentrism, biocentrism or ecocentrism) influence the individual's perception of what an ethical responsibility to engage in climate mitigation and adaptation may entail. Worldviews also contribute to shaping ideas about how to deal with the problem both on a collective and an individual level. An anthropocentric worldview typically maintains that nonhuman nature ought to be protected on the basis of its instrumental value to humans, and may also claim that present generations have an ethical responsibility towards future generations of humans. The focus of strategies for mitigation and adaptation in this context would first and foremost be on fulfilment of human needs. A more biocentric or ecocentric worldview which considers all living en-

Intergovernmental Panel on Climate Change (p. 168). Cambridge, UK and New York, USA: Cambridge University Press.

[14] *Op. cit.* Section 2.6.6.1. See also: Grothmann, T. and Patt, A. (2005). Adaptive capacity and human cognition: the process of individual adaptation to climate change. *Global Environmental Change, Part* A(15), 199-213.
Grothmann T. and Reusswig F. (2006). People at risk of flooding: Why some residents take precautionary action while others do not. *Natural Hazards, 38,* 101-120.

tities or ecosystems to have intrinsic value, may put more emphasis on mitigation as an ethical obligation of human beings to conserve ecosystems and species.

Worldviews motivate the ethical responsibility to prevent irreversible damage to the global environment, and as such they play a central role for climate awareness in general. However, the way the climate problem is communicated through media by climate sceptics and climate front-liners respectively can influence the individual's ethical motivation and willingness to make lifestyle changes.

In our analysis of 2009 we describe four different views of nature that are typically present in debates on climate change.[15] These views, that were originally identified by Schwarz and Thompson (1990),[16] are described as myths, because they are used as if they were each an absolute definition of nature, which can serve as a guide in decisions about environmental governance.

The four myths describe nature as benign, capricious, perverse/tolerant, or ephemeral. Nature as benign refers to the perception of nature as being a self-regulating system that is robust and able to adjust to any external impact. Nature as capricious refers to the view that nature is unpredictable and beyond human control. The perverse/tolerant nature refers to the idea that Nature has a tolerance threshold in regards to how much it can take in terms of pollution, and that careful management is necessary to prevent this tolerance threshold from being exceeded, which would cause damage to natural systems. Finally, the idea of nature as ephemeral refers to nature as a vulnerable organism that is highly sensitive to human impacts, and which requires a high level of management to avoid environmental disasters.

The four myths are all present in the climate debate and are used by climate sceptics and climate front-liners to either promote or defy specific climate adaptation or mitigation initiatives. Depending on the individual's personal perception of nature, the opposing messages about the state of the climate and vulnerability of nature, which are communicated to the individual through various media, may trig-

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[15] See: P. Kemp and L. Nielsen (2009). *Barriers to Climate Awareness* - A report on the ethics of sustainability (p. 33-34). Copenhagen: Ministry of Climate and Energy.

[16] M. Schwarz and M. Thompson (1990). *Divided We Stand - Redifining Politics, Technology and Social Choices.* Exeter, UK: Harvester Wheatsheaf.

ger a feeling of powerlessness. Powerlessness can establish itself in terms of psychological barriers (such as a fatalistic attitude, an insignificance complex, or short-sightedness) which block the individual's recognition of an ethical responsibility and thus prevent proactive climate awareness.

Fatalism

Fatalism or "belief in destiny," is a potential psychological barrier that refers to the powerlessness of human beings in relation to their own fate. Acceptance of the fatalistic 'dogma' can lead to a failure to act, based on the mind-set that the damage is already done, and that there is no point in tempting fate by trying to change the development, 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 an 'autonomous' and complex organism, which may or may not be influenced by human activity, yet is beyond human control.

Fatalism may also be associated with a deep-rooted mistrust of the scope for political endeavour, regardless of whether or not it is felt that 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 which impair 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.

Moreover, fatalism may be a reaction to what is perceived as hypocrisy when front-liners in the climate debate encourage people to 'go green', while they don't seem to follow their own good example.[17] However, it is important to stress that the scientific studies that investigate other physical explanations of increased warming

[17] Al Gore is among the front-liners who has been accused of being a hypocrite because his personal lifestyle does not reflect his message about 'going green'. See: Aikin S. (2009). Comment, The Significance of Al Gore's purported hypocrisy. *Environmental Ethics*, 31(1), 111-112.

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 climate changes we are currently observing.

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.

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 as urgent as other global problems, or environmental experts who are fighting for the environmental cause and who see climate change as the most pressing global problem today.

The sceptics' message about a critical attitude and not putting all one's eggs in the global warming basket is not a message stating 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 mind-set that "if the experts can't even agree, there is probably nothing to it after all."

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 mind-set that: "It's already too late, I can't do anything, and it's all going to end badly anyway."

In short the problem with fatalism as a barrier is that it 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.

The insignificance complex

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 that 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/herself and his/her 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 argument 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.

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.

Short-sightedness

The third type of psychological barrier that can be linked to powerlessness is short-sightedness. Short-sightedness involves a fundamental psychological barrier that is central to both the climate debate and the environmental debate. Short-sightedness 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.

Short-sightedness occurs as a barrier in two respects. On the one hand, it can be a barrier in terms of the ability to connect the local and the global perspective; and, on the other, it can be a barrier to the ability to connect the ethical responsibility for one's fellow human beings to an ethical responsibility for future generations, which calls for action to conserve the environment, and which is at the heart of the actual notion of sustainability.

Short-sightedness 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, short-sightedness is a barrier the moment local commitment is not framed within a meaningful setting. Short-sightedness 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 thereof affect my actions, and partly that choosing 'not to act' is also a choice with consequences for people other than 'myself'.

The Brundtland Report of 1987,[18] in which the principle of sustainability was first made the theme of a major exposition, describes the concept as:

[18] World Commission on Environment and Development (1987). *Our Common Future.* Oxford: Oxford University Press.

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[19]

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",[20] but it also concerns the individual, who acknowledges his or her responsibility for the 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 fail to safeguard sustainable development: "They may damn us for our spendthrift ways"[21] and "Our failure to do so [safeguard sustainable development] will not be forgiven by future generations".[22] The question is, what sort of posthumous write-up will posterity give us if we bequeath to them a world that is significantly harder to survive in, due to our failure to recognise the long-term impacts of our desire to fulfil our own needs and how this may impact the ability of future generations to do the same? 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.

Dealing with the psychological barriers

The latest report from the IPCC's Working Group II emphasises the importance of the 'personal sphere' (which includes individual and collective beliefs and worldviews about climate change, mitigation and adaptation) to efforts aimed at sustainable development. It concludes that "Transformations in this sphere can influence systems, structures, behaviors, and responses, and thus they represent important leverage points for sustainability."[23] The psychological barriers undoubtedly work

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[19] World Commission on Environment and Development (1987). *Our Common Future.* Chapter 2. Oxford: Oxford University Press.

[20] W.R. Blackburn (2007). *The Sustainability Handbook, The Complete Management Guide to Achieving Social, Economic and Environmental Responsibility* (pp. 5 sq.) London, UK and Sterling, USA: Earthscan.

[21] World Commission on Environment and Development (1987). Our Common Future. Introduction. Oxford: Oxford University Press.

[22] *Op. cit.,* Chapter 6.

[23] See: R.J.T. Klein, G.F. Midgley, B.L. Preston, M. Alam, F.G.H. Berkhout, K. Dow and M.R. Shaw (2014). 20.5.2. Chapter 20. Adaptation opportunities, constraints, and limits. In: C.B. Field, V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea and L.L. White (Eds.). Climate Change 2014: I*mpacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the In-*

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 short-sightedly.

Keeping in mind the importance of personal motivation in the effort to address the problem of climate change through climate sustainable development, identifying pitfalls that may trigger the psychological barriers and consider ways to prevent them is crucial.

In dealing with fatalism as a barrier, 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 and her own and the collective effort not 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 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.[24] This example is important in order to strengthen anti-fatalism. Nevertheless, 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.

Fatalism, as we have tried to show, is a pessimistic philosophy of life. Consequently, other and more in-depth ways of puncturing fatalism are needed 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

tergovernmental Panel on Climate Change (p. 1122). Cambridge, UK and New York, USA: Cambridge University Press.

[24] Gore A (2007). *An Inconvenient Truth.* New York: Aschehoug, Penguin.

absurd, because in that case all human creativity becomes incomprehensible and pointless.

In dealing with the insignificance complex the challenge 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 or her 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. 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 for instance, Denmark and many other small countries are too small to be of any significance for the environmental development of the globe.

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

In dealing with short-sightedness as a barrier to acknowledging ethical responsibility vis-à-vis future generations, it is necessary to focus on the relationship between past, present and future, and to 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 environmental and 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 short-sightedness 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.

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.

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. Short-sightedness must be broken both in relation to the past and to the future.

Concluding reflections

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

As regards the physical barriers – invisibility, complexity and imperceptibility – we have analysed them as factors and processes that, both in nature and in human cognition, block people's scope for understanding the physical reality they live in.

In order to prevent the physical barriers, what is needed is information about the physical nature of climate change together with more focus on the role that risks and uncertainty play in decision-making in many other areas. The importance here is that we can learn to live with the fact that uncertainty and complexity is inherent to the problem of climate change and that we can apply our foresight proactively, by using the knowledge we have to take precaution in the best interest of present and future generations. As far as the psychological barriers are concerned, they can be harder to spot. However, once their depths have been fathomed, it becomes clear that they are purely phenomena of consciousness.

The latest review of the scientific evidence available on current and future climate changes and the global and regional impacts and vulnerabilities, highlights the importance of integrating adaptation efforts with mitigation and recognising that climate change represents a threat to sustainable development.[25] Many individual things can be substituted and replaced, but as the foundation for human existence, and social and economic well-being, nature itself is irreplaceable. 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.

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.

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[25] See: The Intergovernmental Panel on Climate Change (IPCC) (2014). SPM 4.5. *Climate Change 2014 Synthesis Report Summary for Policy Makers.* [Online]. Available at: https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf [accessed 2015, May 6].