

The Responsibilities of the political animal during the anthropocene

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Prelude: 'Foul weather'

Jules Verne (1828-1905) is still world-famous today for his scientific adventure novels. One of the highlights of his tremendous output is *From the earth to the moon* (De la terre à la lune). In this novel, published in 1865, a canon of gigantic proportions is fabricated with the objective of discharging a manned capsule in the direction of the moon. In order to achieve this goal, an enormous industrial plant is created in the pristine wilderness of Florida. Although enthusiasm regarding the ambitions and achievements of science is the basic attitude in Verne's novels during this period, there is a clear apprehension of the detrimental effects of human industrial activity on the earth's climate as well. This is how the setting is described on the eve of the explosion:

"The weather was magnificent. Despite the approach of winter, the sun shone brightly, and bathed in its radiant light that earth which three of its denizens were about to abandon for a new world" (1865/1982, p. 336).

Finally, the canon is fired and the next chapter, bearing the ominous title "Foul Weather", contains a striking description of the impact of the event:

"The weather, hitherto so fine, suddenly changed; the sky became heavy with clouds. It could not have been otherwise after the terrible derangement of the atmospheric strata, and the dispersion of the enormous quantity of vapour arising from the combustion of 200,000 pounds of pyroxylye! ... On the morrow the horizon was covered with clouds-- a thick and impenetrable curtain between earth and sky, which unhappily extended as far as the Rocky Mountains. It was a fatality! But since man had chosen so to disturb the atmosphere, he was bound to accept the consequences of his experiment" (p. 354).

In other words, even Jules Verne, who in the 1860s figured as an apostle of scientific progress, had a clear awareness as to what the side-effects of human productivity and industrial expansion would amount to. The experiment with the capsule fired at the moon was indeed an experiment, something of a prelude – a beginning. It was quite clear to Verne that if these technologies would be developed on a larger scale, their environmental impact would be devastating and lasting and the prospects in terms of environmental weather forecasting would be most gloomy. In Verne's novel, the initiative to start the experiment is taken by a small number of individuals, obsessed with an idea. One of the moral questions raised by Verne in his book is whether it is really wise to leave such fateful decisions in the hand of a few individuals. Should not governments take their responsibility here? In those days, however, time was not yet ripe for coordinated international action, supported by national authorities. The major political forces of the day were engaged in a dramatic competition, a kind of technological and industrial rat race, and the global environment was not yet an item of general political concern. Nowadays, however, the prospects for the development of coordinated international policies seem - more favourable?

1. Global responsibility: the dawning of the anthropocene

In 1979, Hans Jonas published his book *The Principle of responsibility* (Das Prinzip Verantwortung), still rightly regarded as a core contribution to the field of environmental philosophy. In this book he basically stated that the present situation is without precedent in human history. Therefore, we are in need of a completely new, environmental ethic.

Ancient ethics, Jonas tells us, emerged at a time when nature was immense, inexhaustible and largely beyond human control. The focus of ethics was on the immediate or short-term consequences human actions and decisions might have for other humans. Nowadays, however, human activity is bound to have a global impact. Therefore, a completely new ethic has to be developed that allows us to focus on the global and long-term effects of our doings. Ethics will have to become a "comparative futurology". We will have to develop the ethical tools that will allow us to compare different scenarios for future development, starting from decisions we are about to take in the present. According to Jonas, the basic principle for such an ethic can be formulated as follows: "Act in such a way that true human life remains possible in the future". This calls for sustainable development of course. Future generations will critically review our activities and decisions in retrospect. They will hold us responsible for what we are doing (of fail to do) now.

Man's impact on the environment is omnipresent to such an extent that the Nobel Prize winning expert in atmospheric chemistry Paul Crutzen¹ (Crutzen & Stoermer 2000, Crutzen 2002) introduced the term anthropocene in order to characterise the present era. He coined the term to describe the most recent period in the earth's history, starting in the 18th century when the activities of the human race first began to have a significant global effect on the earth's climate and ecosystems. Crutzen regards the influence of mankind as so significant that it is appropriate to say that we have indeed entered a new geological era. Humans have become a geologic agent comparable to erosion and eruptions. The term anthropocene emphasizes the central role of mankind in geology and ecology during the current (in many ways human-dominated) geological epoch. For the past three centuries, Crutzen tells us, the effects of humans on the global environment have escalated. Notably because of anthropogenic emissions of carbon dioxide, global climate is likely to depart significantly from the natural behaviour of the atmosphere. The anthropocene started in the latter part of the eighteenth century, when analyses of air trapped in polar ice showed the beginning of growing global concentrations of carbon dioxide and methane – and this date of course coincided with James Watt's invention of the steam engine. According to Crutzen, unless there is a global catastrophe, mankind will remain a major environmental force for millennia to come. A daunting task lies ahead for scientists and engineers² to guide society towards environmentally sustainable management during this era. It will require appropriate behavioural adaptation at all scales and may well involve large-scale geo-engineering in order to optimize the climate. Crutzen's statement raises a series of questions, but it clearly articulates in a geological way the Jonas-like conviction that the human impact on the global conditions of life is something far beyond the ordinary, far beyond the natural course of geological development.

The phenomenon as such that organisms dramatically alter the environment is not without precedent in history of course. We only have to think of the life form that, during the early days of the evolution, introduced oxygen into the atmosphere. This was basically a drama of pollution, referred to by Margulis and Sagan (1997) as the "oxygen holocaust". In the beginning, the world was anaerobic. Anaerobic micro-organisms evolved some 3 to 4 billion years ago and life on earth remained anaerobic for hundreds of millions of years until, about 2 billion years ago, the first worldwide pollution crisis occurred, due to organisms that dumped oxygen as a waste product into the atmosphere. This dramatic event has had positive effects as well, of course, for it made life possible for completely new life forms, - life forms that depended on the availability of oxygen in the atmosphere – including man. In short, for life forms to have a global environmental impact is *in itself* not new. What is remarkable and unprecedented about the present situation, however, is not only the pace of the world-wide pollution (which evolves, when seen from a geological perspective and measured in terms of a geological

¹ Crutzen received the Nobel Prize for his stratospheric ozone research in 1995.

² Interestingly, he does not mention policy makers or politicians in this respect.

time-scale, with catastrophic speed), but also the fact that we human beings happen to be an intelligent species. We know what we are doing, we can measure and determine (with astonishing precision) the impact of our activities on the global environment. And, above all, we are able, in principle at least, to critically review and, if necessary, to accommodate our behaviour, to change our style of life. And this combination is what makes the present situation really unique. Human life has a global impact. We applied science and technology to transform the earth into a global technotope that uses up the earth's supplies and gives back pollution in return. But we can also use science and technology in order to assess the level of impact we have. Comparative futurology – as a normative discipline – is an option that is really accessible to us.

From a philosophical point of view, these are important issues that need further elaboration. First of all we are confronted with an epistemological question: What to make of complicated scientific data involved? Do they contain clear messages? Next, an ethical question speaks out to us: How to take (under the present circumstances) decisions that are responsible and ethically sound, notably when seen in a broader (global) perspective? Before answering these questions it is important to realise that, in philosophical terms, the anthropocene coincides, not only with the dawning of the industrial revolution, but also with what Oswald Spengler in 1918 referred to as the point in time when the "faustian" culture, the faustian style of thought, became a large-scale civilisation. The faustian style began as a small-scale phenomenon: a scientific revolution that slowly emerged in the fourteenth century and eventually produced early modern scientific heroes like Galilei, Newton and others. During the final decades of the eighteenth century, however, this style of thought assumed world-wide proportions in the form of the industrial revolution. This revolution basically consisted in building the faustian way of looking at and interacting with the natural world into powerful technologies and machines. But what exactly did Spengler mean by faustian?

2. The faustian era

According to Spengler, faustian science is driven by a will to power, a will to dominate the (natural) world. In the context of experimental research, natural phenomena are maltreated and manipulated until they finally give up their secrets. The ultimate aim, however, is not knowledge *per se*, but technological dominance. Faustian civilisation is restless, dynamic, vigorous and energetic. It strives for mobilisation and exploitation, both of natural and of human resources. It is directed towards expansion and growth and is characterised by an almost obsessive readiness to accept enormous risks. In Faustian ethics, conscience ("Gewissen") plays a crucial role. Faustian individuals are relentlessly active and willing to take dramatic decisions, but at the same time they have a strong conscience, they are tormented by a pervading sense of guilt, which sometimes may cause them to take dramatic self-corrective measures. They know that they are behaving violently. Eventually, however, a civilisation of this type cannot maintain itself, and this explains Spengler's gloomy title: *Untergang des Abendlandes*, usually translated as "decline of the West", although "collapse of the West" would perhaps be a more adequate alternative. Thus, before going into epistemological arguments over the credibility of scientific data and into the ethical arguments over our responsibilities towards future generations and non-human forms of life, I first want to gain a better understanding of the moral and epistemological profile of the kind of civilisation, the "faustian" West, that brought about the dramatic environmental dilemma we are now facing.

Basically, two kinds of stories are told about this culture, two basic scenarios have been fleshed out. On the one hand we are confronted with stories that emphasise the remarkable achievements of faustian civilisation in terms of progress. Although the faustian era did have its violent and painful moments, we are told that in the long run faustian science and technology dramatically improved the quality of human life. We have made progress in terms of virtually all the relevant criteria.

Other, bleaker stories, however, try to convince us that the exact opposite is true: progress is apparent and short-dated. In reality, we are heading for disaster. In fact, two authors whose stories belong to this category have greatly influenced our image of faustian civilisation, notably of the nineteenth century, namely Marx and Malthus.

According to Karl Marx (1818 – 1883), the nineteenth century is an epoch of growing malaise, of *Verelendung*, and this notably applies to the working classes. His gloomy predictions did not come true. We now know that in the course of the nineteenth century the quality of human life and the social prospects of individuals dramatically improved, notably for those belonging to what Marx referred to as the possession-less “proletariat”. If we read his book *Das Kapital* we cannot fail to notice that, although empirical data are built into his views, theory always prevails. In other words, his theory, or rather his scenario determines what data he will find usable. His use of empirical material is, to put it bluntly, extremely biased and selective. He only mentions the data that fit in, or can be interpreted in such a manner. Everything else is simply left out. The basic message is that the catastrophe, the great collapse of capitalism (as the final stage of faustian civilisation so to speak) is imminent. All progress is apparent and temporary. The story of gradual progress, used by capitalist culture in order to legitimise itself, is effectively silenced by the violent, apocalyptic message of imminent collapse.

The story told by Thomas Malthus (1766-1834) may stand as the “right-wing” counterpart of the Marxist version. Malthus introduced a crucial (mathematical) concept into the debate: the concept of exponential growth, which is still at the heart of contemporary environmental deliberation. According to Malthus, nature tends to oscillate between abundance and deprivation. In times of abundance, a particular species will tend to multiply in an exponential fashion until natural resources are used up. From then on, a period of shortage and decimation (mass starvation) will occur. Being moral subjects, however, human beings in principle have the possibility to get away from this eternally reoccurring natural catastrophe, namely by means of rigorous self-control, notably in the form of birth-control and temperance. If we are willing and able to take suitable measures we may flatten the growth curve into a more moderate, civilised pattern. Thus, we may use our resources in a more intelligent way. Technological improvements (notably of agricultural production) will do the rest. The basic moral message is: we are heading for a catastrophe, but we can (and should) do something about it.

“Marx” and “Malthus”, the left-wing and right-wing version of the story, have a few things in common. They both point out that a dramatic catastrophe is imminent, but that something can be done. These stories appeal to our conscience and call upon us to take sides. These and other, more or less similar stories try to convince us that measures, if necessary of draconian, “faustian” proportions, are inevitable.

In retrospect, stories of this kind, of which countless examples can be given, are bound to make us somewhat suspicious, for two reasons. First of all, most of these stories are still extremely faustian themselves. They take for granted that we see ourselves as beings-in-control. The relationship between human beings and their environment is seen from an anthropocentric point of view, apparently beyond dispute. But at the same time it is clear that this “faustian” attitude, this faustian way of seeing things, lies at the heart of the problems we are facing. If we want to respond to the environmental crisis in a responsible manner, perhaps we should first try to reflect more critically on the way we see ourselves. If we look at contemporary environmental debates over environmental pollution and our responsibilities towards future generations from the perspective of the writings of Martin Heidegger, for example, we would notice that nature is still experienced and described by most authors as a reservoir that is to be consumed and exploited by human beings (albeit in a fair and responsible manner). Should we not rather opt for a view in which nature herself is granted a more active role, and human beings a more moderate one?

Another reason why these stories tend to arouse suspicion, on my part at least, comes from the fact that they have been told so many times already. Time and again, in countless versions, we have been informed that a catastrophe is imminent. In reality, however, if we try to look more soberly at the facts, the faustian era was a time of tremendous, unprecedented increase in terms of quality of life. And even with regard to nature itself a less devastating, less alarming, more differentiated and fine-grained analysis seems both possible and preferable. It is beyond doubt that nature has been maltreated, but at the same time we are faced with examples of resilience and recovery. In many respects, while problematic forms of exploitations continue and should be addressed effectively, signs of improvement are visible as well. Yet, somehow, taking a more differentiated view seems something which is difficult to do. Whoever becomes involved in environmental debate will experience a remarkably strong, almost magnetic inclination, a tendency to repeat the alarming message - that a catastrophe is imminent. But can we still believe it when we realise that this message is perhaps as old as faustian civilisation itself? That it is, so to speak, its inevitable companion? The era of faustian civilisation started in 1789 (the year of the French Revolution) and ended in 1989 (the year of the collapse of the Berlin Wall). During these two-hundred years, the downfall of Western society has been announced in so many ways that nowadays it seems to be losing its credibility. Would it be possible that we have entered a new, post-faustian era that calls for a post-faustian attitude towards nature, towards ourselves, for a post-faustian ethic?

3. The catastrophe as an archetype

Why do we so desperately want to be convinced that we are heading for a disaster? The recently released movie *Where will you be?* is a perfect exemplification of the archetypal image of a man-induced catastrophe. The movie's basic message is that a climatologic event of apocalyptic dimensions is about to happen. It will involve floodings and dramatic fluctuations in temperature. Huge coastal cities will be devastated. It is the climate change scenario, but in a highly compressed version. Intricate debates among experts over how to interpret huge sets of complicated data related to climate change are suddenly translated into a highly effective image. This is the movie's revelatory effect. It makes visible what we, the general public, experience as both frightening and fascinating whenever the climate change issue is raised by mass media. We are on the look-out for a disaster - we expect nothing less. We focus our attention on the likelihood of dramatically exponential growth curves. We are both intrigued and disturbed by the idea that we are having such an enormous impact on the global environment.

At the same time, the film stresses that we have to be on the alert - not only for disturbing facts and findings related to climate change as such. We also have to be attentive to the way we tend to respond to this type of information. Our interpretations and perceptions are influenced by or even guided by the catastrophe-scenario, the catastrophe-archetype. This scenario involves typical expectations, typical clues and plots, typical images and events. The point is not that we should get rid of such ideas. We simply have to rely on scenarios in order to be able to understand and interact with our cultural environment in an effective manner. The important thing is, however, that we have to be aware that these scenario's are at work and that we, while processing information, remain susceptible to the preconceived framework they entail. Typical, arche-typical expectations are craving for confirmation. We all tend to think a little bit like Marx, so to speak, we tend to focus on the facts that fit in, at the expense of other data. The idea that we have become dependent, to a large extent, on an environment of our own making, on a global technotope, makes us feel uneasy in a very fundamental way. Somehow, we are convinced of the fact that this situation cannot be maintained, that this artificial, emergent world, far beyond individual control, this continuously evolving outcome of countless individual decisions and contributions, cannot last. Somehow, we are certain that our gloomy intuitions will be confirmed. And this conviction is linked to the moral intuition that something drastically needs to be done.

The persistent image of the imminent catastrophe is not only congenial with the basic uneasiness that is an inevitable part of living in a technotope. It also confirms our "faustian" sense of responsibility and guilt. We know we have always been doing something wrong, we are convinced of that. We know that violent types of activity are at the basis of our faustian way of life. Our sense of guilt is elaborated in two directions. In the first place, it refers to nature as such, which we spoiled and maltreated in the context of industrial production. But sooner or later, future generations (the secular version of the faustian God) will pass a judgement on us, and we better prepare ourselves for that. But there is a second dimension of guilt and this dimension refers, not to those that are distant in terms of time, but to those that are distant in terms of space: the inhabitants of developing countries. This adds up to the truly faustian dilemma of how to weigh our obligations towards nature against our obligations towards the developing world. A typically faustian way of framing an environmental dilemma would run as follows: how are we to choose between endangered species and starving children? Both options presuppose that we are the beings-in-control, that we are the ones whose decisions will make the difference. Before coming back to these issues in the final section of my paper, I would now like to say something about the Kyoto declaration as such and the intellectual discussions that surround it.

4. The Kyoto Convention and related issues

The *Kyoto Framework Convention on Climate Change* starts from the conviction that climate change is of common concern to mankind. It acknowledges that there are many uncertainties in the predictions of climate change and that efforts to address climate change should be based on sound scientific research and on data that are continually re-evaluated. In other words, we should take heed not to give in to the catastrophe-idea too easily. Our intuitions have to be exposed to scientific check-ups time and again. Parties should promote scientific research and the development of data archives to further our understanding of climate change and they should promote the full and open exchange of relevant scientific information.

In the ethical sections it is stated that we should protect the climate system for the benefit of present and future generations of humankind. Parties (supporting countries) should take precautionary measures to minimize climate change and to *mitigate* its adverse effect. But they should also cooperate in preparing for *adaptation* to the impact of climate change. In other words, the document does not really choose between two more or less rival strategies for addressing the challenge of climate change, namely: mitigation (reducing anthropogenic emissions) versus adaptation (accepting the fact of climate change as such, while building dikes and other defences in areas at risk to forgo calamities). Finally, the parties involved should promote public awareness of what is happening.

All these considerations seem reasonable and obvious. What controversies, philosophically speaking, are involved here? It is perhaps difficult to read them in the document as such. They are bound to be veiled more or less by the "diplomatic" language used in a document that basically strives for international consensus. In order to bring these implicit controversies to the fore more clearly, I will consult two other, more provocative sources that more or less explicitly regard the Kyoto document as an important starting point for further deliberation.

I will start with a very controversial, challenging document, namely Bjorn Lomborg's *The sceptical environmentalist*, published in 2001. Unlike so many other contributions to the environmental debate, Lomborg provocatively states that things are getting better, that we are making progress, and that we are not heading for a catastrophe. In order to address environmental challenges effectively, we must not act on myths but on facts, upon sound evidence. Most of all, we should be critical towards the all pervasive "litany of our ever deteriorating environment", shaped by images and messages that confront us each day (p. 3). Lomborg believes that this image is not backed up by the available

evidence. Moreover, the dramatic cures proposed on the basis of this litany are likely to have an impact much worse than the current affliction. Mankind's lot has improved in terms of practically every measurable indicator, especially if we look at long-term trends. Lomborg is critical of the use of short-term fluctuations as confirmations of sweeping apocalyptic announcements. We need reliable data and sound comparisons. Lomborg points out that, in today's global environment, with its massive amounts of information available, an infinite number of stories can be told about the present situation (p. 7). The story that we are heading for a catastrophe, is too easily taken for granted, not by the experts themselves, but by the mass media and the NGOs.

According to Lomborg, the litany of our ever deteriorating environment ("Everyone knows the planet is in bad shape", etc.) is not in accordance with expert findings. It is not in keeping with reality. Most publicized fears are incorrect, he claims (p. 5), but the litany has pervaded the debate so deeply and for so long "that blatantly false claims can be made again and again without reference" (p. 12). This is not due to primary research in the environmental field, for according to Lomborg the bulk of it is competent and well-balanced. Rather, it is due to the way environmental knowledge is *communicated*. Lomborg argues that public environmental communication taps deeply into doomsday beliefs while "propaganda" (p. 12) presented by large and influential environmental NGOs (such as Greenpeace and WWF) is too readily picked up by the media.

It goes without saying that this book has met with a storm of reactions. Some of his pre-suppositions are indeed controversial, such as his statement that only the prospects *for human beings* are morally relevant and that we cannot speak meaningfully about our obligations towards other life-forms ("We have no option but to use humans as our point of reference"). A more bio-centred, less anthropo-centred view would no doubt affect several of his conclusions. Whereas it is true that only human beings have the ability to enter into moral deliberations, so that anthropocentrism *in this sense* is our inevitable starting point, this does not mean that only human beings are per definition our sole concern. Too readily, however, Lomborg is depicted as someone who is environmentally incorrect in the sense that he tries to justify continuing human expansion at the expense of the environment. I rather read his book as an important contribution by an exceptionally well-documented expert who is deeply concerned about the environment, but who at the same time tries to warn us against the pitfalls of the catastrophe archetype. It may not be the best possible guide when it comes to policy building and decision making during the decades to come.

I will come back to Lomborg in the final section of my paper, but before doing so I would like to consult a second influential document, namely Peter Singer's recent book *One World* (2002). It can be regarded as an up-date of Hans Jonas' influential book *The principle of responsibility* discussed above as its basic line of thought is similar. For eons, Singer tells us, people lived in relatively small and separate worlds. But now people living on opposite sides of the world are linked in ways previously unimaginable (p. 3). The revolution has created a global audience. Therefore, we need to justify our behaviour to the whole world. Our value system evolved in circumstances in which the atmosphere, like the oceans, seemed an unlimited resource, but now conditions have changed dramatically. How can we adjust our ethics to take account of this new situation? According to Singer, how well we come through the era of globalisation (and perhaps whether we come through it at all) will depend on how we respond ethically to the idea that we live in one world (p. 13).

This seems a very convincing line of argument. Nevertheless, there are certain pages and section that make me somewhat suspicious in the light of what was said earlier. This, for example, is how the book starts:

"Consider two aspects of globalization: first, planes exploding as they slam into the World Trade Center, and second, the emission of carbon dioxide from the exhausts of utility vehicles. One

brought instant death... the other makes a contribution to climate change that can be detected only by scientific instruments" (p. 1)

Although I regard Singer's book as well-informed and balanced, it is nevertheless clear that, from the very first page, the catastrophe-scenario is present. According to Singer, we are faced with a disaster, less dramatically visible perhaps than the Twin Towers disaster, and slowly evolving, but eventually its impact will be much larger. The catastrophe-scenario is presented in a rather moderate manner, not (as is the case in some other documents) in a shrill voice, but it is there all the same. We are confronted with a gloomy, apocalyptic image. Hurricanes and tropical storms will move farther away from the equator and hit large urban areas that have not been built to cope with them. Tropical diseases will start to spread. Food production will decrease, notably in sub-Saharan Africa. Sea levels will rise dramatically, coastal ecosystems will change beyond recognition and coral reefs will be destroyed. And we are to blame for all this. A direct appeal to our Faustian sense of guilt is made when it is stated that the Western³ lifestyle "may lead to the deaths of millions of people" (p. 2).

Singer's views are supported by careful research. The IPCC *Third Assessment Report* (published in 2001) is cited as having produced scientific evidence that human activities are changing the climate of our planet. As a scientific document it is open to criticism, but according to Singer it reflects a broad consensus of leading scientific opinion. It is by far the most authoritative view, he claims. I do not doubt this, and I share Singer's concerns. But still I find the script, the scenario, the images that Singer reads into his sources remarkably familiar, to an uncanny degree. And the same goes for the moral message connected with it. According to Singer, climate change has revealed bizarre new ways of killing people. "By spraying deodorant at your armpit in your New York apartment, you could ... be contributing to the skin cancer death of people living in Chile". I seriously doubt whether inciting us to assume an over-sensitive hyper-conscience will be a viable starting point for environmental policy.

Several times, the Kyoto declaration is discussed. According to Singer it is important not to see Kyoto as the solution, but as the first step, a necessary step. Kyoto provides a platform from which a more far-reaching and also more equitable agreement can be reached. Especially the United States serve as a target of Singer's criticism. The international effort to build a global community is hampered by the repeated failure of the United States to play its part. Until now the United States has refused to join the 178 states that have accepted the Kyoto protocol. But Singer is convinced that eventually the United States will be *shamed* into joining in.

Why does such a remark make me feel uneasy? Because I think that the appeal to the catastrophe-scenario, in connection with strong normative appeals to our sense of guilt and shame, are no longer the most effective ways of dealing with the problem of climate change and all that it might entail. The catastrophe scenario can be effective in a situation when public awareness is minimal and broad audiences must be awoken from their ethical slumber, but under the present circumstances, it is more likely to have the opposite effect: because of its doomsday tone of voice it can become paralysing. I do not think the world population will be shamed into changing its style of life. On the contrary, for millions and millions of people living conditions have dramatically improved during recent decades and large groups of people in developing countries will continue to adopt a more or less Western way of life. Our aim should not be to stop the global cultural revolution that is taking place, on normative grounds, but we rather should invest in the technologies we need to develop more sustainable ways of production as well as in technologies for geo-engineering. What we need is not a hyper-conscience, but new and sophisticated form of science and technology.

³ Singer actually uses the word 'American' here.

What is to be done?

I agree with both Lomborg and Singer that we have to build on the best available evidence. But in order to do so, we have to free ourselves from the catastrophe scenario. Instead, we have to produce a view whose moral message is not aimed at creating global panic, but rather strives for deliberate and well-targeted action. What kind of ethos do we need? First of all, we must accept that our situation is not unequivocally catastrophic. A differentiated diagnosis that takes into account all the relevant facts, both favourable and unfavourable, is both possible and necessary. We should be more active in convincing influential actors such as the mass media and the international NGOs that scientific data should not be read with the sole purpose of finding confirmation for the idea that we are the cause of a world-wide disaster. Data should not be used in a biased and instrumental manner, as stepping stones to achieve *political* goals (a political transformation of a particular way of life). And in terms of morality, we should not focus on the faustian tendency to act out of guilt or shame. Rather, science and technology, the factors that initially caused the world-wide environmental crisis, will increasingly become the factors that will allow us to solve it. Paradoxically, we should invest in furthering scientific expansion. We need science, both to investigate and visualise the problem and to solve it.

Last but not least, we should grant nature a more active role. In the present, post-faustian era she should no longer be seen merely as a reservoir of raw materials. Until recently, we saw ourselves as engineers (the kind of engineers immortalised by writers like Jules Verne) that transformed the raw materials of nature into products that could be of use to human beings. In recent years, however, our understanding of nature has experienced a dramatic shift. Scientists in various disciplines have begun to appreciate the astonishing complexities of nature. And they have acquired the sophisticated research tools that allow them to study this complexity. In the long run, this will allow mankind to use, or rather: interact with nature in a more intelligent manner, consuming less energy and producing less waste. Nature is no longer the passive victim of the faustian engineer, but should rather be understood in terms of highly complex, adaptive systems, that can and will be used in a more sophisticated way by present and future generations, and from which a lot can still be learned. We are entering an era of green industries and bio-materials. Nature is no longer the passive victim of human decision making. Rather, what we are faced with is a complex process of co-evolution of human society and the natural environment. The global human community will not give up its aspiration towards further improvement of living conditions, but we will acquire the knowledge and tools that allow us to realise this goal in a more intelligent, more sustainable, less polluting manner.

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