

# Global Climate Destabilization and the Crisis of Civilization

Arran Gare <sup>1</sup>

James Hansen, the world's leading climate scientist, argues that global climate destabilization could totally destroy the conditions for life on Earth, and further, that politicians are not taking effective action. Instead, they are using their power to cripple science. This situation is explained in this paper as the outcome of the successful alliance between a global class of predators and people who must be recognized as idiots taking over the institutions of government, research and education and transforming governments into governments of occupation. The predators are either indifferent to the suffering they will cause, or have an agenda to use the effects of global warming to cull the world's human population. In either case, their views are legitimated by social Darwinism. By revealing their true nature, this alliance has exposed a rift in the civilization of modernity, revealing the suppressed tradition and trajectory of the Radical Enlightenment. With its roots in the Renaissance, the Radical Enlightenment is opposed to reductionist materialism and committed to truth, liberty, justice and democracy. To revive the grand narrative of the Radical Enlightenment it will be necessary to re-plot this grand narrative as a project for creating an Ecological Civilization. This will be a civilization based on process metaphysics and a fusion of science and the humanities in human ecology. The goal projected by this narrative should be to save life on Earth from this alliance of predators and idiots.

## 1. Introduction

In the 'Preface' to *Storms of my Grandchildren: The Truth About the Coming Climate Catastrophe and Our Last Chance to Save Humanity*, published at the end of last year, the world's leading climate scientist, James Hansen proclaimed:

Planet Earth, creation, the world in which civilization developed, the world with climate patterns that we know and stable shorelines, is in imminent peril. [...] We now have clear evidence of the crisis, provided by increasingly detailed information about how Earth responded to perturbing forces during its history [...] and by observations that are beginning to occur around the globe in response to ongoing climate change. The startling conclusion is that continued exploitation of fossil

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<sup>1</sup> Department of Philosophy, Swinburne University, Australia.

fuels on Earth threatens not only the other millions of species on the planet but also the survival of humanity itself — and the timetable is shorter than we thought.<sup>1</sup>

In making this statement Hansen was lending his authority to, and providing detailed arguments for claims that we face disaster. Several years ago, James Lovelock predicted that because of global warming only two hundred million people will be left alive at the end of this century.<sup>2</sup> It is possible that civilization will be totally destroyed and only bands of primitive human societies will survive. It is also possible that with less oxygen deep sea anaerobic bacteria will proliferate and produce massive amounts of hydrogen sulphide that will kill almost all life on Earth.<sup>3</sup> Hansen argued that the positive feedback loops generated by a runaway greenhouse effect could culminate in the complete destruction of the conditions for life on Earth. Earth will become like Venus.

Lovelock, along with many other leading scientists, believes that it is already too late to change course. We can only strive to mitigate the disaster. More pessimistic scientists believe humanity is doomed and have given up the struggle. However, some scientists are more optimistic. Four years ago, Hansen suggested that humanity had a decade to come to terms with this problem and set in train the massive changes needed to avert disaster. However, almost nothing has been done so far, and the Copenhagen Summit on global warming in 2009 revealed the inability of our current political and economic institutions to organize to confront this crisis.

Clearly, this is a crisis of civilization. A crisis is a turning point, where a patient either begins to get better or continues to deteriorate towards death. It appears that the civilization of modernity, the culmination of the evolution of humanity, is not only in crisis; it has generated a crisis of civilization as such. Emerging out of Medieval and Renaissance civilizations of Europe, it now encompasses the globe. It is the first global civilization. Civilizations are characterized by a particular culture permeating and forming its members, its institutions and its products, facilitating complex organization and thereby far greater power over natural processes and historical developments than uncivilized societies. Consequently they are characterized by a far greater level of population. This civilization of modernity that seemed to be greater than all preceding and rival civilizations, which has now been embraced in one form or another by almost all societies around the world, which has facilitated unprecedented affluence for ever greater proportions of humanity, threatens not only to render all such complex human organization impossible, but to destroy life on Earth.

Some environmentalists believe that the civilization of modernity has the potential to meet this challenge. What is required is a massive investment in new technologies, the development of new, more rational institutions able to guide and control such technologies, together with the removal of impediments to the advance of rationality required to take such a path. Hansen illustrates such an attitude. Others argue there is something

fundamentally wrong with this civilization; we will have to either go back to less destructive forms of civilization or forward to a new kind of civilization; to use the expression of Chinese environmentalists, an ecological civilization. From this perspective the crisis of civilization becomes a matter of whether the civilization of modernity can give birth to a new, ecologically sustainable form of civilization, and can do so in time to save civilization as such.

My view is that the Chinese environmentalists are right; the only hope for civilization, humanity and most life forms presently existing on Earth is the overcoming of the civilization of modernity through the development of an ecological civilization. The possibility of achieving this, given how little time there is for the whole of humanity to change direction, might appear remote. However, I believe that this is the only hope humanity has, and as the prospect of execution clears the mind wonderfully (as Samuel Johnson noted), so too does the prospect of global ecological collapse. My main concern here will be to show that when we do recognize the immensity of the crisis we face, there is more reason for hope than might at first appear, and to indicate what needs to be done.

## 2. The Crisis of Civilization

While showing that climate science has developed to a stage at which we can now say with almost complete certainty that we face a catastrophe, at the same time Hansen also noted:

There is a social matter that contributes equally to the crisis: government greenwash. I was startled, while plotting data, to see the vast disparity between government words and reality. Greenwashing, expressing concern about global warming and the environment while taking no actions to actually stabilize climate or preserve the environment, is equivalent in the United States and other countries, even those presumed to be the “greenest.”<sup>4</sup>

He went on: ‘I believe the biggest obstacle to solving global warming is the role of money in politics, and undue sway of special interests.’<sup>5</sup> The book not only documents the development of climate science, but also the corruption of science and democracy by special interests.

Although it is not fully spelt out, this book reveals the conflict between the way science is now developing with its astonishing achievements, and those who wield power in the modern world. Hansen argues that it is paleoclimate studies that have provided the strongest evidence that we are in crisis. Paleoclimatology effectively supports Lovelock’s contention that the global ecosystem, involving geological, hydrological and atmospheric processes, is a self-regulating entity that maintains the conditions for all life; essentially, supporting his claim that the Earth itself is alive. It is a vindication of the holistic ideas of the community ecologists and systems theorists against

reductionist science. It involves seeing humans as part of, and active participants within an active nature, having through culture developed the capacity to interpret the history of life on Earth and to understand its dynamics, enabling them to take responsibility for what kind of future is to be created. Given what is at stake, those who oppose the development of such science and the dissemination of its discoveries to the general public must be insane, evil or idiotic, or possibly all three. Yet this is what is happening. Hansen describes the threat scientists live under of having their funding cut, their careers wrecked, and their livelihoods taken away if they are involved in finding out the truth about global warming and attempt to publish their results. As Hansen noted, 'I have never seen anything approaching the degree to which information flow from scientists to the public has been screened and controlled as it is now.'<sup>6</sup> The victories won in the long struggle for freedom of speech for scientists and academics which appeared to have been finally won in the nineteenth century are being reversed in a few years.

What this conflict has revealed is a deep rift in the culture of modernity. On one side are those promoting the extension of markets and the reduction of nature and people to predictable instruments, on the other, those attempting to uphold the quest for truth in the public interest who are exposing unconstrained markets and the quest for domination to be threats to all life. This rift has exposed something deeper, the integral relationship between proponents of free markets and reductionist science on the one hand, and those struggling for liberty and post-reductionist science on the other. As the victors, the proponents of reductionist thought and the domination of communities by markets have claimed the advance of liberty, democracy and freedom of inquiry as their own. In fact the advances in liberty, democracy and institutions supporting free inquiry have been won in the struggle against such people. This means that the ruling elites of the world have not only exposed themselves for what they are, they have revealed an opposing tradition of natural, social and political thought which has defined progress in terms of higher ideals than the growth of the economy. Despite being suppressed in the Seventeenth Century, this tradition was not completely destroyed; it has been advancing slowly and irregularly and is now in a position to replace the dominant culture of modernity.

While characterizing modernity in terms of this opposition might sound simplistic, my claim is that this is the reality, a reality that in the past has been disguised and confused by the ruling elites and the co-evolution of these traditions. My main concern here is to reveal the comparative coherence of the oppositional tradition. However, to do this it is first necessary to provide a sketch of the culture and *modus operandi* of the ruling elites. And as Confucius pointed out, the first thing on the agenda when considering issues of governance, is to use the correct words.<sup>7</sup> As I have suggested, the response of the ruling elites and their allies to the threat of global ecological destruction reveals them to be insane, evil and/or idiotic. Leaving aside the insane, the mega-pyromaniacs who look forward to a future of turmoil and destruction,

this suggests that the people who now dominate the world are an alliance comprised of people who can be classified as evil or idiots, or both. I will focus first on those who are evil, and then on those who are idiots, showing how important idiocy has been to the advance of evil.

Evil (from Proto-Germanic *'ubilaz'*) originally meant 'over' or 'transgressing', as in 'transgressing the limits'. Although the word 'evil' has been given a bad name by Nietzsche who associated opposition to it with the will to power turned against itself, this notion is clearly applicable to the global predatory class who in their avarice and drive for power are going over the limits of what the global ecosystem can sustain. This is the end point of excess of a class who, having become managers of transnational corporations, have achieved through their control of the media and finance not only grotesque levels of income and wealth, but control over most of the political and other public institutions of the world's nation states. These institutions have been, or are being transformed into instruments for the imposition of markets on all facets of life and for plundering public assets, including natural resources. Politicians act as their instruments either in order to join the class of predators or merely to stay in office. The main ideologues of their grab for wealth and power have been the neo-classical economists who have transformed economics from a science into something more like dogmatic theology in which the market has taken the place of God, greed is celebrated as rational and the ultimate good is identified with corporate profitability and growth of GDP. The economists are supported by management theorists, particularly those who have promulgated the New Public Management philosophy according to which public institutions (including universities and the civil service), through which people had been educated and the market controlled for the common good, should be transformed and run as businesses, effectively dissolving education and the civil service into the market. The result, as James Galbraith has shown, is the Predator State with 'an economic system wherein entire sectors have been built up to feast on public systems built originally for public purposes.'<sup>8</sup> This has left nations ungovernable, at least by their elected governments.<sup>9</sup> They are governed instead by the managers of corporations who have no interest in the common good. Underlying and legitimating these ideas have been orthodox Darwinism and Social Darwinism, which in turn presuppose the mechanistic world-view of Thomas Hobbes.

As Galbraith observed: 'Predators do not mind being thought incompetent: the accusation helps to obscure their actual agenda.'<sup>10</sup> What is their actual agenda? It is inconceivable that this predatory elite believe that the findings of the climate scientists can be dismissed. As Darwinists and Social Darwinists, seeing themselves as winners in the evolutionary struggle and thereby at the cutting edge of evolutionary progress, it can be assumed that they believe, or at least accept, that it is time for natural selection to do its work. Any orthodox Darwinist looking at a graph showing the human population explosion will conclude that it is time for a cull. Global warming will rid the

world of excess human population, furthering evolutionary progress. Just as imperial powers in the Nineteenth Centuries assumed that lower races were doomed to extinction and acted to hasten their demise, and in the Twentieth Century Nazis planned to clear the conquered parts of Russia of excess population, the new global ruling class are preparing the conditions for severe culling of the huge number of excess members of the lower orders of all countries. If this leads to the extinction of humanity itself, so what? After all, as Richard Dawkins has argued, humans, like other organisms, are simply means for the reproduction of strings of DNA.

The predators could not succeed without their allies, the idiots. The word 'idiot' comes from the Ancient Greek '*idios*', meaning 'one's own'. '*Idiōtēs*' came to mean a private person without professional skills, having no interest in public affairs and refusing to participate in public life. It also characterized people having bad judgement in public and political matters. In the Middle Ages '*idiota*' designated the uneducated and ignorant. Later it came to mean people incapable of ordinary reason who act in a self-defeating or significantly counterproductive way. Essentially, idiots are people who live within a civilization without being civilized. They have no sense of the common good, no understanding of the function and relationship between institutions and their importance to communities, and lack comprehension of the broader implications of actions. They simply cannot comprehend broader contexts and cannot see themselves and their actions in relation to these contexts. Such idiocy has grown and even been fostered with the social disintegration of late modernity. Many of these idiots, or at least their children, are likely to die if there is a runaway greenhouse effect. If there were the slightest possibility that the climate scientists are right, these people should be clamoring for action. Idiots, however, have little imagination, have difficulty making connections and do not think about the future. They are ignorant of history and have no appreciation of the values of civilization and the virtues required to sustain it. If asked about global warming, they will claim to be skeptics and say nobody really knows anything, and anyway, what can they do about it. They are not engaged by such issues. What they do have is a sense that other people are more intelligent than they are and have a sense of purpose in their lives that they can barely understand, and this rankles. If given the opportunity, they will bully such people. And despite their lack of intelligence, they know far better than more intelligent people that the way to get on is to ingratiate themselves to people with power and to always act in their interests, often while pretending to do the opposite.

John Quiggin noted: 'The main features of managerialist policy are incessant organizational restructuring, sharpening of incentives and expansion in the number, power and remuneration of senior managers, with a corresponding downgrading of the role of skilled workers and particularly of professionals.'<sup>11</sup> The challenge of the predators, including careerist politicians who serve the managers of corporations, has been to impose these practices on the public sector and to deprofessionalize public sector employees, including scientists,

academics and teachers. This is the philosophy of the New Public Management. Here they have been able to utilize idiots. In the modern world idiots no longer withdraw from public life; with the assistance of predators they are taking over public life and are more than willing to implement the policies of the predators. To begin with, they are willing to occupy positions for which they have no sense of vocation and no competence. Then, assuming they are superior to the people they have displaced, they redefine or accept the redefinition by others of their roles, occupations and institutions. For instance, science driven by the quest to find things out, understand the world and proclaim the truth has been displaced by techno-science focused on developing technology judged by its capacity to generate profits. Idiots dismiss as of no significance that which they cannot understand (for instance, the theoretical work in science that makes techno-science possible) and bully those who are not 'team players'; that is, who resist being directed or show signs of independence, originality, integrity or even intelligence. More importantly, these people take over administrative roles and convert them into managerial positions, proliferating themselves until they outnumber the people doing real work, and then attempt to tell former professionals, those whom they have not yet retrenched, how to do their work. These idiots are the people described by Montaigne in his study 'On Voluntary Servitude' (*De la servitude volontaire*) who abandon liberty and accept tyranny to become petty tyrants. Such people have been invaluable to the predators in taking control of political parties, extending markets, implementing new management policies and taking control of and subverting public institutions. Most importantly, since the quest for truth and an educated population are the greatest threat to the agenda of the predators, idiots have been central to crippling institutions of research and education and undermining the autonomy of cultural fields.

Bullying skilled workers and professionals, refusing to acknowledge the significance of their work and placing them in a constant condition of insecurity in which they are at the mercy of their managers (which is really slavery as the Romans understood it), is only the beginning of their humiliation. The resentment of idiot managers extends to denying the ideals to which these employees had defined their significance, including the ideal of pursuing truth. The reduction of science to a means to make profits enables work on post-reductionist science, through which science could be reconciled with the humanities and the ideals of truth, justice and liberty thereby defended, to be dismissed as frivolous. Any challenge to the reductionist view of humans as machines for reproducing DNA can be eliminated, undermining the basis for challenging the treatment of people as merely expendable instruments who need to be culled. The arts and the humanities are being dismissed as elitist and irrelevant, unless they can be harnessed to the entertainment industry. And universities are being transformed into transnational business corporations, with the science and arts faculties displaced from their central role and replaced by business faculties,

reproducing and multiplying predators and idiots. The success of the alliance between predators and idiots in transforming education has been demonstrated in USA and Britain. In Britain eleven and twelve year olds today have the cognitive development of nine and a half year olds of only fifteen years earlier.<sup>12</sup> It is hardly surprising that the New Public Management philosophy that has produced these results is now being taken up enthusiastically in Scandinavian countries and Japan.

### 3. Neo-Liberal Governments Exposed as Governments of Occupation

The assault on the institutions of science and education and, more broadly, on the institutions of democracy has exposed opponents of environmentalists for what they are, revealing what they believe and what are their goals. This has also clarified the situation we are in, and thereby what is required to overcome the obstacles to dealing with ecological problems. The predators have revealed themselves to be the enemies not only of civilization and humanity, but of life, which because of their domineering orientation and mechanistic thinking, they can barely recognize as such. Their agenda has been the total domination of the world, transforming state institutions from institutions through which national communities were able to govern themselves into institutions imposing markets and serving the functioning of the global market. They have skillfully cultivated and deployed an army of idiots, associated particularly with the marketing industry, public relations and 'human resource' management, although these are only the beginning. Without any allegiance to any national community, predators are effectively a transnational class transforming governments into governments of occupation, utilizing local idiots to do their dirty work. Through indifference or design, they are pursuing policies which will lead to the deaths of most of the people they now effectively govern.

In a special edition of *Time* magazine published in 1989, Thomas Sancton proclaimed:

Let there be no illusions. Taking effective action to halt massive injury to the earth's environment will require a mobilization of political will, international cooperation and sacrifice unknown except in wartime. Yet humanity is in a war right now, and it is not too draconian to call it a war for survival. It is a war in which all nations must be allies.<sup>13</sup>

There has been a war, but the environmentalists have been losing. We can now see why. Environmentalists have been losing mainly because they have not properly identified the enemy. The difficulty has been that the enemy has not been an external country or government but a government of occupation, in which the people exercising destructive power overtly have not been



members of the predator class as such, but their allies, the idiots. Once the enemy is identified, their characteristics understood and the stakes appreciated, it should be a simple matter to unite and mobilize against them. However, this government of occupation is not like the Nazi occupation of European nations. It is more like the British occupation of India where in the Nineteenth Century the British managed to convince the Indians who they were exploiting and often starving to death that they were incapable of governing themselves. The alliance of predators and idiots, through their corruption of education institutions and perversion of language has managed to convince the people they have subjugated that they are incapable of governing themselves. People have been convinced that the only freedom that has any meaning is the freedom to shop (augmented by removing all constraints on the operation of markets and virtually declaring war on those engaged in genuinely productive work to intensify their exploitation), and that the equality that really matters is the equality of people's opinions (allowing Hansen's claims to be dismissed as only one opinion among others). Not only do people live under a government of occupation, people's minds are under occupation. This is the problem that has to be addressed above all else.

By assaulting the institutions of science, education and democracy, the ruling elites have not only exposed their true nature and agenda, but have revealed the importance of these institutions to each other. Hansen, forced to defend the autonomy of science, first examined the mission statement and statement of values of NASA, discovering their high ideals to serve the public with integrity, and the connection between these and the ideals of democracy upheld by two of the founding fathers of USA, Thomas Jefferson and Benjamin Franklin.<sup>14</sup> In doing so he drew upon and thereby revealed the importance of history. It is not difficult to go from there to the work of historians of ideas to reveal the astonishing achievements of the subordinated cultural tradition, a tradition that has not defined progress as the transformation of nature and people into instruments for increasing profits, but as the advance in liberty, democracy and humanity. From here the historical roots of these different traditions, their relationship and the history of their opposition, can be understood, and it thereby becomes possible to revive the alternative tradition.

#### 4. Reviving the Radical Enlightenment— Creating an Ecological Civilization

The tradition upholding liberty and humanity has its roots in Renaissance Italy, but the Italian Renaissance was a revival of the ideas of the ancient Roman republicans, who in turn were influenced and inspired by the Greeks. This tradition celebrated the ideal of self-governance and freedom from slavery, recognizing education as central to forming people capable of such self-governance. While ethics and political philosophy were recognized as

central to this, so also were history and cosmology. History, through which past deeds were commemorated, causes of conflicts analysed, and people oriented for collective action, and cosmology through which people could situate themselves as active participants in a self-organizing cosmos (beginning with and building on Anaximander's philosophy), emerged together in Ancient Greece. These were the discourses required for deliberation and self-governance. History as a discipline and the notion of the self-organizing cosmos (culminating in Giordano Bruno's 'Nature Enthusiasm') were revived as part of the civic humanism of Renaissance Italy, developed to defend and practice democratic republicanism. When civic humanism spread to Northern Europe, it generated a hostile reaction, most importantly, in France and Britain. Mersenne, Descartes and Hobbes were central to this. Mersenne, a friend of both Descartes and Hobbes, characterized Bruno as 'one of the wickedest men whom the earth has ever supported.'<sup>15</sup> He initiated the quest to develop an alternative system of thought, a counter-Renaissance, which was provided by Descartes and Hobbes. Hobbes, reacting against the civic humanism of the English revolutionaries, characterized people as machines moved by appetites and aversions and society as the product of a social contract between these egoistic individuals, and on this basis attempted to transform the language of politics to make the quest of liberty promoted by the civic humanists unintelligible. Both Descartes and Hobbes dismissed the value of history, arguing that knowledge is accumulated through the application of a method, and promoted science as a means to control the world. Developed in a less extreme form by Locke and Newton, this mechanical philosophy, supported by those with power, has underpinned opposition to Renaissance thought up until the present. It informs mainstream economic theory, Darwinian evolutionary theory and Social Darwinism, imperialism, racism, efforts to subordinate communities and political institutions to markets, neo-colonialism and managerialism. Its hidden agenda, as Stephen Toulmin showed, is of a world totally controlled with mechanical efficiency.<sup>16</sup> Despite persecution, however, proponents of Renaissance ideas about society and nature were preserved, defended and developed. This was the origin of the Radical Enlightenment.

The Radical Enlightenment had a significant influence in Holland, America and France in the Eighteenth Century. However, it was in Germany that the Radical Enlightenment achieved intellectual pre-eminence in the work of Kant, Herder, Goethe, Fichte, the early Romantics, Schelling, Hegel and Marx. The Radical Enlightenment has been most influential through the development of history as a discipline and through the development of the concept of culture. Through this influence, there has been a steady advance in people's humanity, most importantly, in their recognition of the significance and potential freedom of others, and the value accorded institutions through which such recognition is crystallized. Advances, although uneven in different countries, were evident in the development of the humanities and post-mechanistic science, the development of the Humboldtian model of the

university, the development of public education, and the growing autonomy of cultural fields associated with the pre-eminence achieved in the quest for truth and justice over the quest for power. It is to the advance of the Radical Enlightenment that we owe the increasing democratization of politics, the development of a professional, open civil service committed to the common good and to keeping the general public informed, able to control market forces to ensure the market serves the community. The Radical Enlightenment is also responsible for the recognition accorded diverse peoples and other civilizations, opposition to imperialism and the development of global political institutions such as the League of Nations and the United Nations. Its further development has been associated with efforts to eliminate inequalities of income and wealth, to provide people with economic security, to achieve global justice and to extend democracy to the workplace.

The struggle between these two major traditions has not been so much a struggle within the civilization of modernity but a struggle between civilization and anti-civilization. But these traditions have co-evolved so that they are partially dependent upon each other, confusing the opposition between them and disguising the brutality of the dominant tradition. The ideological power of the opponents of civilization has come from the success by which the mechanical philosophy has been extended from physics to chemistry, biology, economics and then to the other human sciences, along with technological developments facilitated by such science. However, the very existence of this tradition has been dependent upon advances by the Radical Enlightenment, notably, developments in public institutions, the arts and ethics, and more recently, post-mechanistic science. These advances now offer the possibility of completely displacing the mechanical philosophy and the domineering forms of social life based upon it. This is the situation characterized by Ilya Prigogine and Isabelle Stengers as 'The New Alliance' in which, at a crucial point in human history, advanced science has vindicated the tradition of process metaphysics and now supports the humanities rather than undermining them. This should have accelerated the quest for liberty, humanity and civilization. But in the late 1970s and early 1980s, the predators mounted their final campaign for complete dominance. With the help of idiots, particularly lower level managers in marketing, human resources and public relations, and mediocre scientists, artists, journalists and academics willing to undermine autonomous cultural fields in return for support from the predators and fellow idiots, these predators succeeded in so confusing people that most of those aligned with the Radical Enlightenment virtually lost the plot.

The central problem now is to revive and re-plot the grand narrative of the Radical Enlightenment. This should now be seen not only as a narrative of the development of culture and institutions recognizing the significance and potential of people to govern themselves, but a story of the evolution of the global ecosystem producing the conditions for the emergence of humanity,

recognition of the significance of all life, with the development of humanity being characterized as developing the conditions for people to take effective responsibility for the future of life on Earth. This narrative should encompass the development of post-mechanistic science, with a particular focus on the development of ecology, including climate science. These should be seen as nature, through humanity, coming to understand itself and its potential. Correspondingly, ecology, as the science which integrates all advances in post-mechanistic science and which, as Robert Ulanowicz argued, might 'break the logjams that hinder progress in understanding [...] even physics',<sup>17</sup> should encompass humanity, including people's capacity to form themselves through narratives, integrating history and ecology, the humanities and the sciences. With ecology displacing physics as the model for all science, science must be reconceived as not only the quest to understand the world, but also as the basis for forming humanity and changing relations between people and with the rest of nature, thereby participating in creating the future. This synthesis involves recognizing the primary reality of process. As Ulanowicz called for, we need a 'process ecology' founded on and developing a new ecological metaphysics, a development of process metaphysics.<sup>18</sup>

Creating an ecological civilization will involve embodying this cosmology, grand narrative and process metaphysics in people's practices and in their institutions, from the local to the national, regional and global levels, enabling people to appreciate the world as communities of communities, extending from themselves, their components and their immediate communities to the global eco-system, and to see the goal of life as augmenting the life and resilience of these communities. To achieve this, such an ecological grand narrative must enable people to situate themselves as individuals and as communities as participants in history and in the becoming of nature. It must orient people, enabling them to envisage desirable scenarios for the future, reveal what is required to achieve these, and to inspire them to act. It is also necessary to reveal and understand the achievements of the past and the existing forms of thinking and institutions which need to be defended and built upon. On these foundations we can then build a new civilization, an ecological civilization.

## Notes

- <sup>1</sup> James Hansen, *Storms of my Grandchildren: The Truth About the Coming Climate Catastrophe and Our Last Chance to Save Humanity*, (New York: Blumsbury, 2009), p. ix.
- <sup>2</sup> As recorded by Michael Powell, "The End of Eden: James Lovelock Says This Time We've Pushed the Earth Too Far," *Washington Post*, Sept. 2, 2006, CO1.
- <sup>3</sup> This will happen if CO<sub>2</sub> reaches 1000 ppm. in the atmosphere. See Peter D. Ward, "Impact from the Deep," *Scientific American*, October 2006, 295(4): 64-71.
- <sup>4</sup> Hansen, *Storms of my Grandchildren*, p. ix f.
- <sup>5</sup> *Ibid.* p. x.
- <sup>6</sup> *Ibid.* p. 109.
- <sup>7</sup> Confucius, *The Analects*, Book XIII, verse 3.
- <sup>8</sup> James Galbraith, *The Predator State*, (New York: Free Press, 2009), p. 146.
- <sup>9</sup> See Barbara Harriss-White and Elinor Harriss, "Unsustainable Capitalism: The Politics of Renewable Energy in the UK," *Socialist Register 2007: Coming To Terms With Nature*, (London: Merlin Press, 2006), pp. 72-101.
- <sup>10</sup> Galbraith, p. 148.
- <sup>11</sup> Cited by Shelley Gare, *The Triumph of the Airheads*, (Sydney: Park Press, 2006), p. 168.
- <sup>12</sup> An investigation by Professor Michael Shayer of 10,000 11- and 12- year olds found that they are 'now on average between two and three years behind where they were 15 years ago' in cognitive and conceptual development (Joseph Crace, "Children are less able than they used to be," *The Guardian*, Tuesday, January 24, 2006).
- <sup>13</sup> Thomas A. Sancton, "Planet of the Year," *Time*, Jan.2, 1989, p. 14.
- <sup>14</sup> Hansen, *Storms of my Grandchildren*, p. 129, 137.
- <sup>15</sup> Marin Mersenne, *L'Impiété des déistes*, (Paris, 1624), Vol. I, 230f. Translated and quoted by A. C. Crombie, "Mersenne," *Dictionary of Scientific Biography*, Ed. Charles Coulston Gillispie, 16 vols (New York: Scribner 1970-80), Vol. IX, 1974, p. 317.
- <sup>16</sup> Stephen Toulmin, *Cosmopolis: The Hidden Agenda of Modernity* (Chicago: University of Chicago Press, 1992).
- <sup>17</sup> Robert E. Ulanowicz, *Ecology, The Ascendent Perspective*, (New York: Columbia University Press, 1997), p. 6.

- <sup>18</sup> Robert E. Ulanowicz, “Agency in Evolutionary Systems” and “An Ecological Metaphysic,” *A Third Window: Natural Life beyond Newton and Darwin*, (West Conshohocken, Pennsylvania, 2009), Ch. 8 & 9.