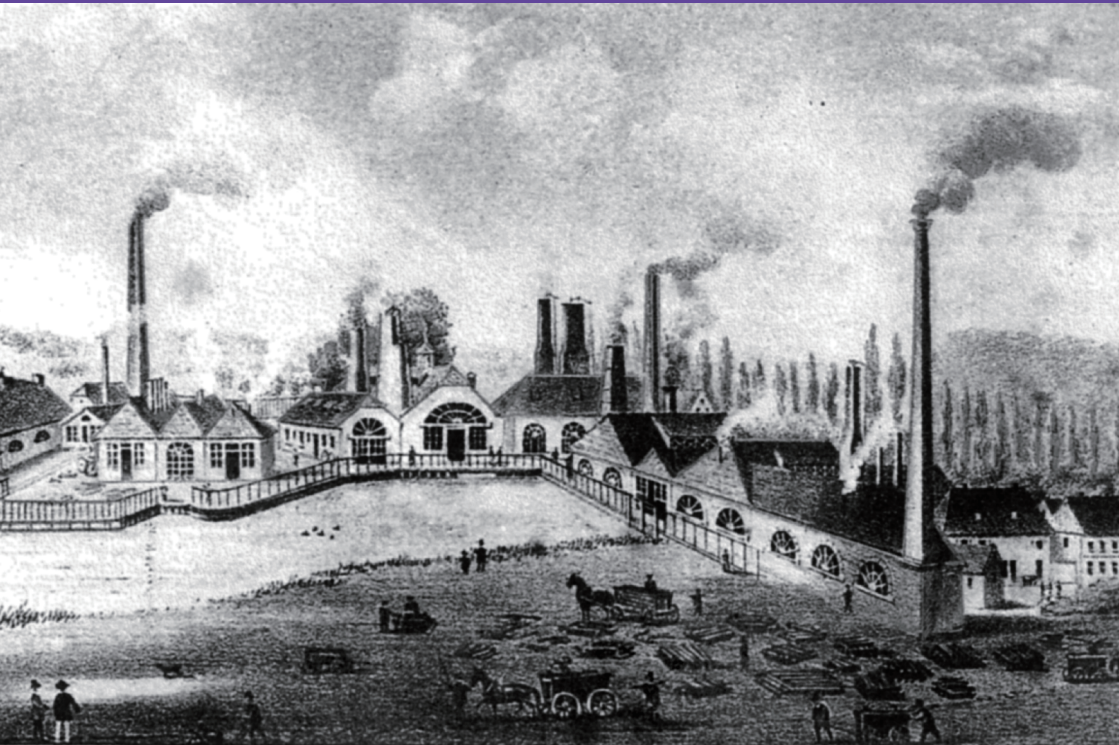


*Origins of the Environmental Crisis:
A Pragmatic Revisitation of the Question*



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This is a preparatory paper for a workshop that is being planned
for either December 2013 or March 2014.

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Foreword

This paper, and the workshop for which it is a preparation, are likely, at first glance, to appear like reinventing the wheel. The paper will present some considerations of the historical causes of the environmental crisis and the workshop will aim at the advancing these deliberations.

Discussing the historical background of the environmental crisis is obviously not new. Particularly in the 1970s and 1980s, this kind of discussion was a prominent dimension of the environmental movement. The question may validly be raised whether that discussion actually got us anywhere. Three to four decades have passed since much of this discussion was carried out, and there does not appear to be a great deal of evidence that it has contributed significantly to generating workable solutions to environmental problems. So is there really a point in rehashing the issue?

At the same time, however, approaches that have been taken in regard to the environmental crisis in the past couple of decades have also not achieved a great deal of success. Greenhouse gas concentrations increase unabated, biodiversity loss continues, oceans become progressively more polluted, etc. There is, therefore, an ongoing need to explore ways to understand the environmental crisis that will help generate implementable and effective responses.

Attempts at addressing environmental problems today, at least at the levels of national and international governance, tend to focus on specific solutions to specific problems. Since global warming is primarily caused by increased greenhouse gas emissions, strategies are sought to reduce these or to sequester carbon dioxide from the atmosphere; to protect biological diversity, rules are created to stop trade in endangered species or to preserve their habitats; to control the various forms of pollution, legislation is made regarding emissions.

However, if the environmental crisis is seen not just as an aggregate of a number of individual environmental problems that have coincidentally arisen at the same time, but as something that has come about because there is something fundamentally disjointed in the relationship of human

society with the natural environment, then simply trying to address individual environmental problems as they occur will not be sufficient. The fundamental disjointedness must be addressed. It was the perceived need to address this disjointedness that has motivated the quest for understanding the historical background of the environmental crisis.

Therefore, even though past discussions of the historical background of the environmental crisis may not appear to have contributed to identifying concrete strategies for responding to the crisis, rather than abandoning the effort to explore causes, it may be better to seek a different approach to carrying out that exploration.

From the 1960s to the 1980s, many discussions of causes aimed at uncovering root causes—the most fundamental and profound causes of our disjointed relationship with nature. In many cases, discussions of root causes attributed the ecology crisis to a particular mentality, such as Lynn White’s argument that the origins of the crisis lay in a specific understanding of Christianity and in the “marriage between science and technology”¹, or the argument of such thinkers as Arne Naess and Fritjoff Capra that they lie in a mechanistic worldview that is said to have emerged in the wake of Descartes and Newton.

These arguments may be helpful in terms of setting long term goals. The concern is, however, that they may not readily help identify concrete steps for dealing with the environmental crisis. If the cause is a mentality, then changing that mentality becomes the issue, but there is no clear way to change people’s mentalities, especially when the required changes would involve loss or perceived loss, or a radical change from one’s present circumstances. Any attempt to coerce thinking would require a strong state apparatus that, as well as being abhorrent in terms of human rights, would probably also not be conducive to environmental sustainability.

Other discussions of root causes identify such factors as the incompatibility of an economy that necessitates and is dependent on growth with the limitations of the planet, the failure to recognize, in Schumacher’s terms, that natural resources are capital and cannot be

1 Lynn White, “The Historical Roots of our Ecologic Crisis”, *Science*, New Series, Vol. 155, No. 3767 (Mar. 10, 1967), pp. 1203-1207

treated as income,² inappropriate economies of scale,³ or other aspects of the globalised free market economy. One risk of assessments such as these is that they identify problems so deep-rooted and pervasive in every aspect of our society and economy that any solutions would involve such a massive transformation that, not only will it be near impossible to garner the necessary political will to carry them out, but it may not even be possible to identify implementable steps to achieve those solutions.

The goal of our research project will be both to revisit, evaluate and collate arguments regarding the origins of the environmental crisis and to further explore the historical background of this crisis with a view to coming to an understanding of the crisis that will be conducive to generating concrete strategies for responses. Rather than seeking out deep-rooted and fundamental causes, our primary concern will be with more proximate causes—a step more removed than immediate causes such as arguing that global warming is caused by increased greenhouse gas emissions, but still proximate enough to potentially indicate concrete and implementable steps that can be taken to address the situation now. This will include looking at the various developments that led to the advance of industry, at the switch from above-ground to mineral resources, at how agriculture was affected by the industrial revolution and the economic development that followed, at the fact that raw materials and processed goods came to be moved more and more around the globe, etc.

This paper itself is very much an overview to simply set out the methodology and the goal of the workshop. The approach will be to focus on the period since the industrial revolution and to look at various facets of developments that have taken place and try to identify those that have contributed to the emergence of the environmental crisis. It will include discussion of the views of White, Schumacher and others, and will aim at drawing concrete conclusions from them.

While the project is undertaken with the hope that it will provide concrete ideas for steps that can be taken to resolve the crisis, it is also undertaken with the recognition that this hope might well not be fulfilled. The world has changed so much—in terms of population, social structure,

2 E. F. Schumacher, *Small is Beautiful*, Harper and Rowe, New York, 1973, pp. 17-20.

3 *ibid.*, ch. 5.

technologies available, lifestyles, expectations in life, etc.—since that time that the notion of going back to the way things were would be totally absurd, and even the more realistic hope that some insights may be gained that will help find a way forward in the conditions that pertain today may turn out to be futile. On the other hand, some helpful ideas may be achieved, and that would make the effort worthwhile.

Further, it may be that not all the changes that have taken place since the 1970s and 80s have been negative. Many strategies are being undertaken to restore the communal dimensions in society and to empower communities (such as rural communities and communities of indigenous peoples), and many practices that have been introduced such as the ideas of payment for environmental services and access and benefit sharing could feasibly be developed as a means of strengthening the rural sector and achieving something closer to a balance between agriculture and industry—the loss of which this paper will suggest has been one of the factors behind the emergence of the environmental crisis. The growth in the service sector since that time may also open up new possibilities for a sustainable balance that could not have been envisioned formerly. It may be, therefore, that in many respects the world today provides a more opportune context in which to implement some of the ideas that emerged in the past.

This paper is an outcome of a preliminary stage of research. Most particularly, a workshop was held 8-9 December 2012 in which these matters were discussed in depth. This workshop, conducted in Japanese, took the form of a conversation between scholars with expertise in the history of economics, social history, etc., and others with expertise in environmental economics and environmental policy.

A report on this workshop was drawn up in a collaborative process that included further discussion of the issues. This report was published in Japanese by the Nanzan University Institute for Social Ethics in March 2013. This paper is drawn from that report and from other materials that have been put together by the Institute for Social Ethics in relation to this research project.

Participants in the December 2012 workshop were:

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Part I. Reviewing our Understanding of the Environmental Crisis

We begin by reviewing our understanding of the environmental crisis. The purpose of this is to determine whether, in looking at the causes of the environmental crisis, the focus should be on technological developments and the advancements in the means of production that have taken place since the industrial revolution, or on some other aspects of post industrial revolution society and economy. As has been alluded to in the preface to this paper, the attribution of the environmental crisis to scientific and technological developments has not been uncommon. White's attribution of the crisis to "the marriage between science and technology" and arguments by others that it derives from a mechanistic worldview essentially attribute the crisis to technological developments in that these arguments seek to explain the emergence of the ecologically unsustainable technologies that have been developed since the industrial revolution.

However, technologies are tools and, while the tools available may set certain parameters on what people are able to do, essentially, they do not determine what people do. To fully understand the origins of the environmental crisis, it will be important not just to look at developments in technology and in the means of production, but to look at what has driven the expansion of this technology across the globe and the massive scale at which economic activities harmful to the natural environment have come to be carried out.

If we take the automobile as an example, according to the industry journal *Wards Auto*, the number of automobiles on the planet reached one billion in 2010.⁴ It should be clear that the environmental impact of automobiles would be entirely different if the number were one million rather than one billion, and different again if there were only one thousand vehicles on the planet. Thus scale and not just technology must be seen as a fundamental issue in our analysis of the background to the environmental crisis and that means that we must consider not only what drove the

⁴ Sousanis, John (15 August 2011), "World Vehicle Population Tops 1 Billion Units," *Wards Auto*. http://wardsauto.com/ar/world_vehicle_population_110815, Retrieved 19 June 2013.

developments in technology and the means of production, but also what has driven the spread of these around the globe and generated the incredible scale at which they are implemented. That is likely to mean focusing on issues related to demography, society, economics, etc. It also means that in considering issues related to ideas and values, the focus should not only be on the kinds of worldviews that have been behind the advances in technology and the means of production, but also on the those that have been behind the increase in scale and the global expanse of the those technologies.

An Overview of the Disjointedness between Human Society and the Natural Environment

As has been noted in the foreword, this research project works from a position that sees the environmental crisis as not being merely an aggregate of different environmental problems that have occurred relatively simultaneously, but rather as the outcome of a disjointedness between human society and the natural environment—a disjointedness that must be addressed if the environmental crisis is to be dealt with effectively. For that reason, then, the project operates from a position that sees a certain unity in all the various problems of pollution, climate change, biodiversity loss, etc. The focus will be on seeking causal factors that are common to these various issues.

However, it is likely to be helpful to come up with a breakdown of the factors of current economics and society that appear to be causative of or at least seem to contribute to these problems. With regard to the processes of production and consumption, the following factors may be considered important.

1. Processes and Products Manufacture:

The very processes of manufacture that have constituted a major portion of the economy since the industrial revolution, involve taking materials from the earth or the biosphere and converting these into other materials adapted to human use. Very often the materials produced do not readily decompose in a way that makes it possible for them to be reincorporated into the cycles of nature and in many cases they actually

introduce harmful contaminants into the environment—radioactive materials, CFCs, pesticides, detergents of various forms, etc. These may last for decades, centuries and even millennia before they become harmless. Further, in many cases, in the processes of this manufacture, emissions and effluent are produced that, if released into the natural environment, will cause harm.

The fact that manufacture has become such a central part of our economy also means that vast quantities of raw materials must be supplied, and this means a rapid exploitation of the earth's resources. Not only does this make an eventual exhaustion of these resources a real concern, but the processes of extraction themselves are prone to have harmful environmental consequences. The emergence of manufacture as a central part of the economy and the vast scale on which this has come to be carried out, then, must be seen as major factors in the environmental crisis.

2. Distance:

Today, resources and manufactured goods are transported around the globe. This means that organic matter is not returned to the soil from which it came but is disposed of frequently in waste dumps or burnt in places distant from where it was produced—interfering significantly with the cycles of nature. It also means that great quantities of energy are consumed in the process of transportation and that means of transport (vehicles, ships, aeroplanes, etc.) will be required in massive quantities. This phenomenon of distance in the present day economy in itself must be seen as a major reason behind the fact that there are one billion, rather than one million or one thousand, vehicles on the planet. A full understanding of the environmental crisis will therefore require an analysis of the factors that have driven this phenomenon.

3. Energy:

In the production, transport, marketing and consumption of goods and services, and in many cases their disposal, the amount of energy consumed has increased rapidly. Further, at the time of the industrial revolution, there was a switch from the use of energy from above ground sources (wind, water, wood, charcoal) to energy from subterranean sources. This has

resulted in a massive use of fossil fuels with serious environmental consequences. Both the ongoing escalation of energy consumption and the heavy concentration on fossil fuels as a source of energy must be seen as causative factors of the environmental crisis.

In our research project, we take these three aspects of the current economy—manufacturing, distance and energy—as major factors that create the disjointedness between the post industrial revolution economy and the natural environment. Further, we take as our starting point that the focus must not just be on the methodologies associated with these factors, but also the scale. We will therefore look at the historical background of the emergence of these factors considering both methodology and scale.

Part II. Focusing on Factors that Emerged with or Following the Industrial Revolution

The environmental crisis is widely recognized as having emerged from the industrial revolution, so to identify reasonably proximate causes of the crisis we will focus on the changes that came into human society around the time of the industrial revolution and the period since.

In the period since the industrial revolution, the world economy has undergone three major structural changes—the first around the middle of and during the latter half of the 19th century with the industrialisation of Europe, the U.S. and Japan, the second during the latter half of 19th century and the first half of the 20th centuries with the advance of chemical and heavy industries, and the third, the period of rapid economic growth following the Second World War. We will be interested in seeing, therefore, how these periods have impacted on the trends that are identified as having a causative influence on the environmental crisis.

A Working Understanding of the Industrial Revolution

The Industrial Revolution can undoubtedly be understood and defined in numerous ways. For the purposes of this paper, as a working definition, the Industrial Revolution will be understood as a transformation in the processes of production and trade characterised by the following three changes:

- a) A substantial increase in the product of labour, partly as a result of an increased division of labour (as argued by Adam Smith using the example of the production of pins) and partly as a result of massive advances in the means of production made possible by unprecedented advances in technology.
- b) A transition in the forms of energy used. Mostly, this meant a transfer from the use of wind, water, wood and charcoal to the use, beginning in the early 18th century, of coke, coal and later oil. This can be characterised as a transition from the use of above ground sources of energy to the use of subterranean sources of energy.

- c) A transition in economic organisation and trade practices, or more specifically, the emergence a free market economy.

These three transitions occurred largely concurrently in the latter half of the 18th century and the first half of the 19th century. However, they may not be linked by any form of necessity. It may have been possible that any one of these could have occurred without the other two. Therefore to understand accurately the relationship between the industrial revolution and the environmental crisis, it may be helpful—indeed necessary—to consider separately what drove these transformations and how they impacted on the various trends that appear to be in a causative relationship to the environmental crisis.

Other Concurrent Trends to be Considered as Causative Factors

There are other transitions or trends that occurred concurrently with these—trends whose relationships with the above three should certainly be considered, but that may not necessarily be best understood as integral parts of the industrial revolution. The following is a list of the trends that may be considered causative of the environmental crisis that have emerged in our discussions so far. The list is not intended to be exhaustive, nor are any of the descriptions of these trends considered to be the final word on that particular issue. Rather the listing is presented as a sample of the kinds of factors we are interested in looking at in order to provide a basis for deliberation and discussion.

- a) The spread of the industrial revolution and the rapid development of technology brought rapid changes in the lives of people. Those who lost their livelihood as a result of these changes became poor. While the industrial revolution would ultimately, at least in the developed world, lead to an improved level of living for all classes, its first impact was to create poverty for many—leading, for example to the Speenhamland System to address rural poverty, to activity by Robert Owen and others to address the problem of poverty among workers exploited in factories, and to the Poor Law Amendment Act of 1834. This Act was influenced by the notion that help to the poor would be likely to encourage laziness and therefore aimed at restricting

assistance to those most needy by making the conditions of relief—the only form of which was entry into a workhouse—so undesirable that only the most needy would be tempted to accept it. This issue of poverty is important because of its relationship with the various other trends described below.

- b) Population growth: world population growth reached 1 billion shortly after 1800, 2 billion in 1927, 6 billion shortly before the year 2000, and 7 billion in 2011. It may be important to identify what drove the early stages of this population growth: increased prosperity encouraging population growth or quite the reverse—the fact that children could work in factories meaning income for poverty stricken parents.
- c) Commodification of labour, land and money: one aspect of the economy that has emerged since the industrial revolution is that labour, land and money have come to be treated as commodities that can be bought and sold like any other form of merchandise. Whether this is appropriate is a matter that needs to be resolved. Land is a part of nature and therefore something of a public nature. As it has become a commodity, a concept of land ownership has gained dominance that makes ownership something completely independent from the people who are now or who have been traditionally connected with that land and whose livelihoods may still depend on it.⁵ The environmental impacts of this style of ownership must be considered. Today, those who have legal title to land may live at a great distance from that land and may be people for whom the land is no more than an investment. They may feel no direct responsibility in preserving it for subsequent generations.
- d) Urbanisation: As more and more people came to live in cities, the proportion of the population needing to make a living through industry inevitably increased. Urbanisation may be considered an important reason for the question of scale that we have raised, and therefore the driving factors behind this must be considered. Birth rates among the urban poor would be one consideration, as would the influx of people from rural areas into the cities. In fact, in Britain, the influx of people from rural areas to cities began with the enclosure movement, which

⁵ See, for example, Polanyi's discussion of this: Karl Polanyi, *The Great Transformation*, New York: Rhinehart & Company, 1944, ch. 15.

preceded the industrial revolution, and should be considered as not having resulted exclusively from the growth of industry. The Poor Law Amendment Act of 1834 may have also been a driving factor of this influx into the cities, since, for the rural poor, seeking work in the cities would have seemed preferable to entry into the workhouse, which, as we have noted, was the only alternative the Act made possible. Therefore, in studying urbanisation, it is necessary to look at the manifold factors that cause it. This is important since the greater the proportion of people living in cities, the higher will be the proportion of people dependent on industry as a means of earning a living. This will presumably constitute one of the driving forces behind the issue of scale.

- e) **Marginalization of agriculture:** The economy that emerged from the industrial revolution favoured industrialisation. Agriculture became steadily disadvantaged. Power became concentrated in the cities and countries heavily dependent on agricultural exports became disadvantaged.

In this context, the economic thought of Malthus and his differences with Ricardo would seem to be an important reference point. Malthus argued for the need to protect agriculture. What he sought, however, was not simply the protection of agriculture, but a balance between agriculture and industry. He aimed at an industrial development that was attuned to agricultural development. Malthus is generally considered to have been conservative, based on his attitudes towards the French Revolution, his views on the responsibility of the poor for their own poverty, and his protection of the landowner class. However, in face of real poverty, he did recognise the need for some form of intervention on behalf of the poor. He argued that the economic growth of England at the time was too weighted towards industry and that this was driving labourers into poverty. His argument for a balance between agriculture and industry was one that sought a golden mean. One of his ways to achieve this was through rents paid to landholders. This was one of his differences with Ricardo, who argued that rent is unearned income. Malthus, saw rent to landowners as legitimate in that they have a role over and

above the production of goods, namely the role of conserving the fertility of the soil. He saw the need for this role to be rewarded. He further saw rewarding this role as a means to maintaining a balance between agriculture and industry, and he saw it as a means of sustaining industry by creating a market for manufactured goods—in that the more adequately rewarded landholders would then become purchasers of manufactured goods.

An important question in our research then will be whether some strategy similar to that proposed by Malthus would have lessened the degree to which the economy became weighted towards industry and thereby stemmed the flow of people from the rural areas to the cities.

- f) The global expansion of the industrial economy: as the industrial revolution progressed, it came to be accompanied by an expansion and intensification of colonialism. Prior to the industrial revolution, colonialism had been concerned with the acquisition firstly of precious metals and subsequently of goods suitable for trade in the context of a mercantilist economy. The economy that emerged in the period after the industrial revolution motivated a much more intensive and extensive colonialism. Raw materials for the expanding industries were needed, as were markets for the manufactured products. This ultimately had the impact of drawing the whole world into the economy that emerged from the industrial revolution.
- g) Lack of structures of accountability: In the complex relations of this economy, where the measures of profit and loss become the determinants of behaviour and the consequences of that behaviour are far removed from the people who make the decisions, it becomes increasingly difficult to perceive and be responsible for the impact one's own behaviour has on other human beings, on society, and on the environment. In the free market economy, there exists no system for accountability for harm done to society or to the environment. In a situation where major corporations—who, by their very nature, are primarily motivated by economic interests—are becoming ever more powerful, this becomes a serious matter for concern. An exploration of the background of the emergence of this phenomenon may be important.

- h) The loss of the communal: In the world today, we tend to think in terms of public and private. As well as the public, the domain of governance, and the private, the domain of the market, there is also the communal. In traditional society, the communal has been an important part of preserving natural environments. The local rules that villages and small communities have used to preserve the forests and waterways on which they depend are examples of this. As national governments became more powerful, the self-rule of communities was weakened, and as a result of this their capacity to manage their natural resources has been diminished. This has meant the dominance of the public over the communal. At the same time, the communal has also been eroded by the expansion of the private sphere—an outcome of the expansion of the market economy. As the market economy has come to permeate human society throughout the globe, resources that traditionally were under town or village ownership have become subject to private ownership and in many cases the traditional practices and rules by which they were preserved have been eroded.
- i) Intellectual developments: The Enlightenment, based on the perception that human intellectual development meant the construction of a rational world in a secular realm, gave rise to a scientific approach to the human being and human nature, and to an anthropocentric view that placed human beings in mastery of nature. With the collapse of feudalism and the rise of the right to private property, the individual was placed at the centre. Material security and a higher standard of living came to be seen as preconditions for the attainment of this enlightenment. The industrial revolution should not be seen as having been brought about only by technological advances. The intellectual advances promoted by the Lunar Society, for example, also had an important role. The network of scientists enabled a situation in which wealth would accrue to those who made scientific discoveries, and this resulted in their power of influence increasing and encouraged a worldview that saw scientific advance as an effective means to promote wealth. Thus an enlightenment that would promote and spread industrial knowledge came to be sought.

- j) Failure to recognize the limits of the earth: Behind the environmental crisis lies a worldview that ignores the limitations of the earth and is grounded in a view of nature that sees it as inexhaustible. Economic growth was predicated on this view of the world as limitless. In fact because there was the ongoing possibility of exploiting new lands in the American West, Australia, Africa, etc., the perception of the inexhaustibility of the world's resources easily went unquestioned. The limitations of resources was brought up by William Stanley Jevons who argued that the British economy, overly dependent on coal, would reach limits of growth as the coal petered out. However, an 1871 survey report concluded that the total depletion of coal would never be reached, and concern for this matter largely disappeared. Jevons perceptions were re-introduced by the Club of Rome with *The Limits to Growth*, and in the thought of Robert Underwood Ayres.
- k) The Loss of Norms: With the loss of religious values it became more difficult to guide individual morals. This loss of religious values accelerated with the increased wealth brought by the industrial revolution. Thus the perception of the earth's resources as inexhaustible came to be accompanied by a loss of norms that could possibly have provided some restraints. Further, it may be that globalisation has had a warping effect on what should be a healthy rational self-interest, leading to a pattern of behaviour in which people, stripped of ethical considerations and imperceptive of the consequences of their actions, focus on short-term rather than long-term self-interest.

Summation

As already noted, this is not intended as an exhaustive list of the causes of the environmental crisis. Rather the intention is to present the factors that have emerged in the discussion so far so that they can be used as a basis for ongoing discussion. The research from which these descriptions have been drawn has been intended as a preliminary stage aimed at bringing a number of the main issues into focus. We are now ready to go onto the next stage, which will seek international input into the discussion.

The workshop planned for December 2013 or March 2014 will be conducted in English. Like the previous workshop, it will aim at bringing together scholars versed in the history of economics, social history, environmental history on the one hand and scholars specializing in environmental economics and environmental policy on the other. The goal will be to promote a conversation between these that will assess the historical background of the environmental crisis in a manner sufficiently concrete and specific as to be able to provide hints for a response to the crisis that will be both adequate to the task and at the same time realistically implementable in the current world context. Persons interested in this workshop are encouraged to contact the Nanzan University Institute for Social Ethics.

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