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## THE TIDES OF ENVIRONMENTALIST DISCOURSE

### **Introduction: From Escape to Nature to No Escape**

The pollution crisis of the 1960s, the energy crisis of the 1970s and the unfolding population explosion brought about the rise of modern environmentalism. For many critics in those days society seemed to be in deep trouble and in need of radical change. By now, many of the earlier worries have been dismissed; meanwhile, new concerns for the environment are emerging. The current environmentalist scene, however, is different from the one of two or three decades ago. This time there exists not only a variety of activist movements, but also a rather complex field of environmental studies, legislation and politics, which helps to detect problems early on and find reasonable solutions to them. This article will follow the tides of the environmental discourse for the last three decades or so and its at least partial transformation from radical critique and ac-

tivism into a recognized part of today's scientific and social discourse.

The tides of environmentalism happen both in time and space, both physically and in the mind; they rise and withdraw, they change geographical direction, and they change character. I will here briefly examine how the environmental discourse has shifted focus from being largely an internal Western debate to gaining first an East-West and later a North-South emphasis, and how it has moved from local to global scale concerns, and from technology to biology. Meanwhile, it is possible to perceive a couple of ongoing long-term trends in these ever-changing tides: a shift from green socialism to green capitalism, and from radical activism to environmental professionalism.

The theme of the relationship between Man and Nature is an old one (e.g., Glacken 1967). What is typical of earlier attitudes in this respect is a clear division between

the world of man and the world of nature. Since antiquity, the opposition between the rustic and the civilized, the country and the city, is deeply ingrained in our language. Later, the Judeo-Christian tradition brought in the idea of Man the Master of Nature (White, 1967). This attitude flourished especially after the Industrial Revolution and throughout the 19th and the 20th century. Not surprisingly, the environmental crisis of the 1960s was attributed to exactly this kind of mentality which was seen as leading to narrow-minded overexploitation of resources and reckless pollution of the environment.

The modern epoch brought attention also to another view, derived from religion - Man the sinner, fallen and expelled from paradise. Rousseau developed this theme further, inverting the relationship between country and city, nature and culture. To him Nature represented the initial state of innocence, purity and beauty, later corrupted by 'civilization'. But the same idea reemerged in 19th century Romanticism and appears to be a significant part of the changing environmentalist critique of mainstream culture ever since.

It was this romantic view that was the driving force for countless mountain hikers in Europe and North America as well as for the emerging group of conservationists. For these people nature was a sanctuary, and going to the wilderness, even for a while, was regarded as having a beneficial effect on the human soul (it seems that then, the benefits for the body were less emphasized than today). In the United States this romantic view was opposed by another perspective: the view of nature as a workshop, with man as its manager. For these people, even as the world of man was encroaching upon the world of nature, far away in remote corners unspoiled nature still existed and could be admired by the traveller. The world still seemed big; nobody expected that one day there would be no wilderness left and no place for escape. However, this was exactly the gist of the 1960s' environmental discourse, which can therefore be seen as a watershed in the discussion about the rela-

tionship between Man and Nature. No longer was there a split between the world of society and the world of wilderness; pollution was potentially threatening to human health and to life itself.

### **The Development in the West: From Silent Spring to Global Warming**

In 1962, Rachel Carson published her book *Silent Spring*, where she alerted the public to the dangers of the use of pesticides and the existence of chemical pollution. The picture of a deadly, invisible threat reached an audience already prepared for such a possibility. The realization of the danger of nuclear fallout in the late fifties and early sixties and the subsequent campaigns to ban nuclear testing had raised people's general awareness of hidden threats in the environment. Now studies analogous to the study of radioactive contamination showed that many toxic substances in fact migrate and accumulate in food chains and were capable of eventually reaching harmful levels. Further on, statistical evidence raised the question whether there was any threshold at all below which toxic substances would not be harmful. Living with risk became part of everyday life (see e.g., Douglas and Wil-dawsky, 1982).<sup>1</sup>

Another worry of the sixties was the rapid growth of the world's population. The earlier theory of demographic transition did not seem to work. Neo-Malthusian predictions were now brought forth to warn of future disasters. According to the most famous example of this kind, Paul Ehrlich's *The Population Bomb* (1968), the future was marred with forthcoming food shortages and the prospect of mass death due to hunger, war and pestilence.<sup>2</sup>

To this was added the concern about dwindling resources, most famously formulated by the authors of *The Limits to Growth* (Meadows et al., 1972). This report, which predicted that by the middle of the next century the Earth's resources would be depleted had been sponsored by the Club of

Rome, a group of rich industrialists. As such, depletion of resources is a recurring, old theme: it has been the worry of the industrial countries on several occasions, including such scares as the coal crisis in England in the middle of the 19th century and the whale oil crisis in the United States around the same time (Simon, 1983). The initial concerns were linked to the increasing population. The energy crisis of 1973 just seemed to confirm the worst fears. During the days of the Carter administration the federal government supported research on conservation of resources and on alternative energy sources. In the words of President Carter, the problems facing America at that point represented "the moral equivalent of war."

However, the scare was averted, at least for some time. The high prices of oil had encouraged exploration of oil resources elsewhere and led to exploitation of new oil fields in places such as Alaska and the North sea. Another response was the development of more energy-efficient cars, industries and buildings. A result of all this was that in the 1980s the prices of fuel and raw materials went down (Moore, 1992). Thus, it seemed that man's ingenuity could in fact cope with the perceived limitations of nature and the whims of the economy. By this time, however, new environmental problems had been discovered: acid rain, ozone depletion and global warming. To this was later added diminishing biodiversity. These were not the kind of problems to be solved through technological quick fixes or by the discovery of new resources. These problems addressed the very way in which industrial civilization was functioning on the planet, or the feasibility of life as such.

Acid rain, defined in the 1970s, demonstrated that pollution is a problem which does not respect national borders. It was observed that the acidity of rain increased in some regions, and this was leading to the depression of vegetation and death of forests and lakes. Moreover, this was happening in Canada and Scandinavia, areas without much population or industry. As it turned

out, it was emissions from the power plants of the United States and Western Europe that was the chief cause of acid rain (Groedner and Krutzen, 1989). The acidity came mostly from the sulfur contained in coal and oil burned for energy. This discovery led to regulations to use cleaner fuels (see e.g., National Wildlife Federation, 1992). Still, the problem is solved only for those regions of the planet where regulation is possible.

The ozone scare emerged in the early 1970s with the projects to build a supersonic passenger aircraft fleet. One of the objections to this development was that airplanes flying high in the stratosphere would destroy the ozone layer, which protects life from the harmful ultraviolet radiation of the sun. Aviation eventually went in another direction, towards jumbo jets and Airbuses. In the meantime, scientific research had identified another threat for the ozone layer: the proliferation of ozone-destroying chemicals.

Atmospheric scientists found that a particular class of chemicals used in spray cans, refrigeration and air conditioning was destroying the normal atmospheric chemistry. Normally these CFCs (chlorofluorocarbons) were rather inert, which was exactly the reason for their commercial use. However, the CFC molecules could rise in the atmosphere and at high altitudes under the influence of ultraviolet light react with the ozone. The process could spread rapidly with one molecule of CFC destroying thousands of molecules of ozone. After this discovery spray cans were ruled out. Thus a major source of CFCs was eliminated; however, these chemicals continued to be used in other fields, such as refrigeration.

The biggest threat of all seemed to be global warming. The phenomenon of a 'greenhouse effect' due to the presence of carbon dioxide in the atmosphere was discovered by the Swedish chemist Svante Arrhenius already one hundred years ago. However, only after 1958 did a systematic measurement of this gas start. By the early 1970s it was possible to detect a trend towards the increase of carbon dioxide in the Earth's atmosphere. The extrapolations

showed that somewhere in the middle of the next century the temperature of the Earth may rise enough to cause some melting of the polar ice and a rise of the sea level. Moreover, the climate zones might shift, which would affect agriculture and natural ecosystems. Such a turmoil would put humans and natural life under great pressure to adapt to the new environment (Houghton et al., 1990).

Despite this lingering uncertainty, the fall of oil prices in the early 1980s, together with such achievements as cleaner air and the protection of some endangered species, created the impression that environmental problems could, after all, find a rational solution.<sup>3</sup> Indeed, the words of President Nixon from 1970, that science and technology have created the pollution problem and that they will therefore also clean up, seemed to have been realized. It seemed that humans were indeed capable of utilizing 'the ultimate resource' - their mind (Simon, 1981). One indication of this new optimism about our capacity for coping with environmental scares was Julian Simon and Herman Kahn's book *The Resourceful Earth*, published in 1984 as a response to the alarmist famous Global 2000 report, produced in 1980 under the Carter administration. Soon, however, new clouds were gathering on the horizon.

This time the scare came from a rather unexpected source: new developments in scientific theories about the environment. Here a central role was played by new computer models. Scientists were now discovering chaos theory with its unusual ability for ramifications. A much-quoted example of possible ramifications was the prediction that a flap of a butterfly's wing over the Amazon could bring about a tornado over Texas (Lorenz, 1979). Based on these computer simulations and predictions, scientists could now say that a rapid climate change might not only be a possible danger in the next century but that it could happen already within the next few years. This again brought environmental fears to a new height. Thus, in 1985 one theory predicted, that even a small warming of the planet could make the

ice sheet of western Antarctica unstable. The sheet could desintegrate rapidly and the level of the ocean could rise with 5-6 meters in a matter of years (Ad Hoc Committee on the Relationship between Land Ice and Sea Level, 1985). The glaciologists rapidly began gathering data about quick climatic change in past glaciations, towards sudden warming or freezing. They still have not reached a conclusion. The suggestion was clear, however. Dramatic things can happen quickly if we continue with the old ways.<sup>4</sup>

For some, all this indicated that scientific theory had been fundamentally at fault: earlier evolutionist and gradualist theories had not been able to predict such developments. Indeed, during this time catastrophe theory gained increased popularity and catastrophic scenarios explaining the death of the dinosaurs or suggesting the return of a new Ice Age appeared in the popular press (see e.g., Ager, 1993; Goldsmith, 1985; Raup, 1986).

To compound the scare, in the mid-80s a real ozone hole was discovered over Antarctica. This ozone hole took many scientists totally by surprise (Graedel and Krutzen, 1989; Zehr, 1994). It was not enough to have outlawed spraycans. Something would have to be done about refrigeration as it was. Also acid rain turned out to be a more complex problem than expected. Sulfur dioxide was not the only pollutant. Even the best internal combustion engine or power station using fossil fuel inevitably turns out also nitric oxides, which are another source of acid rain. In view of this, it seemed that the solution could only be some new 'clean' source of energy (Graedel and Krutzen, 1989).

Meanwhile, there were frightful reminders that the problem of a safe environment was still unsolved and that human neglect and insufficient pollution control measures could cause disasters. In December 1984 more than 2,000 people were killed in a Union Carbide pesticide plant in Bhopal by leaking poison gas (e.g., Choucri, 1991). In April 1986 the Chernobyl disaster sounded a new

alarm for the dangers of nuclear power plants and showed once more that environmental disasters disregard national boundaries (for more details about the implications, see e.g., Marples, 1993). In March 1989, the Exxon Valdez supertanker spilled 10,836,000 gallons of crude oil in Alaska's wild-life rich Prince William sound (Anderson and Leal, 1989), again raising questions about the U.S. oil industry and the responsibilities of global enterprises.

One of the new developments in the 1980s was the introduction of the concept of biodiversity. The earlier idea of 'endangered species' was this way supplemented with a much broader concept, which started competing for the public's attention.<sup>5</sup> Rather than concentrating on a particular species, the new concept focused on the genetic diversity within a species, the diversity of species within an ecosystem, and the overall diversity of life in the biosphere (e.g., Solbrig, 1991). The loss of species and biological variety was now compared to the great extinctions of the geological past (e.g., Ehrlich, 1981; Wilson, 1989, 1992). Meanwhile, the rainforest, the most species-rich habitat in the world, became a special object of environmentalist concern (e.g., Smith, Williams and Plucknett, 1991). Now it was the biologists who became heroes: they could testify to the necessity of sustaining biological diversity (e.g., Ehrlich and Wilson 1991; Wilson 1984, 1989, 1992).

Like the pollution and population problems of the 1970s, these various new global problems also managed to get world-wide attention. In 1984 the UN-sponsored World Commission on Environment and Development, chaired by the prime minister of Norway, Gro Harlem Brundtland, held its first meeting. The result was eventually published as *Our Common Future* (World Commission on Environment and Development, 1987). Unlike earlier reports, such as the *Global 2000 Report to the President* (1980), which had already made a pessimistic forecast of population, resources and pollution trends, the Brundtland Commission emphasized the necessary interconnectedness between envi-

ronmental and economic problems, using such terms as 'sustainable development'. (This report was followed up in 1989 with the widely telecasted international conference "Forum on Global Change and Our Common Future"). Again a natural phenomenon helped underline the seriousness of these issues. In the late 1980s there was drought in the United States (see e.g., McKibben, 1989, 23). To some, this marked the beginning of the climate change. In 1990 the cover of Time magazine declared the Earth "Planet of the Year." The environmental anxiety had reached yet another height.

At present, all these scares seem to be postponed. The basic point, however, is that the problems still remain unresolved at the present level of technology. It is not surprising, therefore, that many envisioned scenarios for the future do not rely on a technological solution to environmental problems but rather involve suggestions for thoroughgoing social and economic reorganization. In 1992, the UN Conference on Environment and Development (UNCED) convened in Rio de Janeiro, following up on the basic theme of the Brundtland report: the contrast between environmental issues and economic development. However, emerging conflicts between the industrialized and developing countries undermined the conference's power to reach agreement on global problems of the environment. As the historian Paul Kennedy put it, referring to the much-advocated notion of 'sustainable development': "The problem now is whether it is possible to have sustainable capitalism in the next century" (Kennedy, 1993).

### Environmentalist Critique

While the environmental problems were originally discovered and formulated by scientists, about whose political or personal motivation we can often only guess, these problems generated a discourse, whose participants clearly state their preferences and proposed solutions. Thus, parallel to the unfolding of environmental problems there

has developed a continuing environmentalist critique. Contributions to this critique come from all over the political spectrum.<sup>6</sup>

Already in the 1960s, the realization that the air, water and soil were being contaminated by irresponsible corporations or individuals brought about environmental regulation and legislation in the United States and other advanced industrialized countries in the West. It was believed that with proper regulation industry can become less polluting and technology improve. However, this turned out to be a long and expensive process, even today still affordable only by the rich countries. A major achievement of pressure groups and organizations linked to the environmental movement of the 1960s and 1970s is a series of administrative and legislative actions at the state and federal level in the United States, starting with the Environmental Policy Act in 1969 and the establishment of the Environmental Protection Agency (EPA) in 1970 (Goldfarb, 1993: xvi). At the global level, the first recognition of environmentalist concerns was the UN Conference on the Human Environment, arranged in Stockholm in 1972. However, from the very beginning there were some that were not so sure that the problems were soluble through regulation or by technological means. This radical critique got new fuel when newly discovered environmental problems replaced earlier ones.

There are various brands of environmentalism in the United States, but two types can most easily be distinguished. One may be called "urban" environmentalism. This brand is represented by people who spend their holidays hiking in the national parks. Environmentalists of this type are often in conflict with farmers and loggers when it comes to the use of federal lands on the western ranges. These part-time environmentalists enjoy and want to save nature while they do not give up their urban life style. The other type can be called full-time environmentalists. These activists are envisioning a new life style, which involves such things as changing the way in which food and goods are produced and distribut-

ed. Thus, the environmentalists of this brand believe that we have to change human life in order to save nature. This means that full-time environmentalists often see defending the environment as only one among many causes which they simultaneously pursue (other concerns may be, e.g., animal rights, genetic engineering, rights of women and minorities).<sup>7</sup>

The organizations of the environmental movements in the United States are diverse and have different agendas. Some, like the Sierra club and Audubon society are old naturalists' organizations; others, like Greenpeace, have appeared in the seventies and have an explicitly radical agenda. There has been a suggestion that at present the leadership of the "old" naturalist clubs may be taken over by the "new" radical environmentalists (e.g., Begley, 1991). However, the great proliferation of societies interested in protecting the environment seems to indicate a genuine concern across a broad spectrum of the population in the United States.<sup>8</sup> This is not surprising, considering the tradition of nature preservation and conservation ever since the second part of the last century, manifested by the innumerable national parks; and, above all, the considerable media attention given to environmental issues.

Another sign that environmental problems are taken seriously is the fact that it has become a positive marketing device to declare a product "environmentally friendly" (such as hamburger containers or even bank checks!). Indeed, in 1992 a *Time* and Cable News Network (CNN) poll showed that 94% of the respondents regarded environmental protection as "very important" and that 64% are recycling cans and bottles. Two-thirds were worried that they "should be doing more" for the environment, and 70% would be willing to pay \$200 more in taxes for a cleaner environment (National Wildlife Federation, 1992).

But it was particularly leftist writers that found a yielding new theme in the environmental scare. Obviously, industrial society in its capitalist form has had its traditional

opposition from the left. This time, however, it was not only the interests of the working class, but humanity's very existence that was being threatened by capitalist selfishness, greed, and irrational social organization. In 1972 Gus Hall, the leader of the American Communist party put the question straightforwardly in his book *Ecology. Can We Survive under Capitalism?* (Hall, 1972). There was no longer any place to go to escape pollution; society had to be changed. The universal crisis needed a universal response: a social revolution. Barry Commoner discussed a similar theme in his *The Closing Circle* (1971). He particularly declared Ehrlich and his Neo-Malthusian predictions wrong: there was no population crisis, but instead a crisis generated by the existing social relations (see also Commoner et al., 1971)

In the early seventies it was still not very clear to many what sort of differences existed between the radicals in the West and the official Soviet ideology. Even today, when the Soviet Union is fast becoming history, it does not seem clear to some scholars. It is therefore important to note that many radical environmentalists in the West, rather than recommending a Soviet-type grand Marxist plan of a rationally organized, centralized society, were following ideas from communitarian socialism and anarchism. Already names such as *Ecotopia* (Callenbach, 1975) clearly indicated affinity for earlier or non-Marxist versions of socialism. This orientation was particularly explicit in the United States. In Western Europe, the distinction was less clear.

Books like *Blueprint for Survival* (The Editors of the Ecologist 1972, 1974), *Small is Beautiful* (Schumacher, 1973), *Ecotopia* (Callenbach, 1975), and *The Ecology of Freedom* (Bookchin, 1982, 1991) depicted lifestyles and alternative solutions that were easily understandable and achievable by individuals. The authors of these books did not suggest the creation of new revolutionary organizations (with the hierarchies these implied) or any large-scale economic reconstruction. Communism with its mammoth

scale mode of operation and obvious inability to cope with human and environmental problems was not an acceptable alternative for them. While it was not clear how an alternative society could be achieved, it was clear what could be done to change at least some existing practices. Thus, environmental activism was born, with its typically issue-oriented or local focus and emphasis on grassroots mobilisation. Among the most radical of these radical activists are Greenpeace and Earth First! The first organization has switched from preventing the French nuclear testing program to saving the whales and later to attacking CFCs. The latter one has specialized in such things as protesting against dams and putting spikes in old trees ("monkeywrenching"), to prevent these from being logged (for more on the activities of Earth First! see Foreman, 1991).

The relationship between science and the environmentalist movement in America is very interesting. While it is true that the environmental problems are real ones, the certainty with which some conclusions are presented is not typical of traditional scientific discourse. Science is seldomly certain and it would indeed be difficult to make forceful policy recommendations based on the typically tentative findings of contemporary science. In order to have a suitable 'scientific' program for action, some simplification of science must occur and unnecessary doubts be erased. In some cases, scientists themselves have participated in such "simplification" of claims about environmental risks, perhaps for the sake of the worthy cause or, why not, to demonstrate the need for further research funding. This is from an interview in 1991 with the global warming guru, Stephen Schneider, author of *Global Warming: Are We Entering the Greenhouse Century?* (1989): "So, we have to offer up scary scenarios, make simplified, dramatic statements, and make little mention of any doubts we may have...Each of us has to decide what the right balance is between being effective and being honest" (Schell, 1991).

On the other hand, some scientists recent-

ly put their foot down about the hype involved in global warming theories. In preparation for the Rio Summit, several surveys were done with atmospheric scientists. At this point, the majority seem to have agreed that there was no clear evidence of a man-made global warming, that catastrophic predictions were based on models that still need to be validated and - not surprisingly - that additional research was needed (Singer, 1992; see also Rubin, 1991-92).

### **The Development in the Eastern Bloc: From Critique of Capitalism to Ecoglasnost**

How did the Soviet Union respond to all these problems? In the late 1960s and early 1970s, leading Western environmentalist books were translated into Russian, because they were highly critical of contemporary Western society (incidentally, in the Soviet Union the problem was perceived as one of conservationism, i.e. conservation of nature, something that was familiar to the Soviet reader). For example, Rachel Carson and Barry Commoner were both translated and their criticism of pollution and of problems of Western society duly quoted in the Soviet press. Soon, however, there was a blackout on the environmental theme. It seems that the Soviets realized that the criticism in those books might in fact be applicable to all industrialized societies, not only the capitalist West.

An early 1960s debate on lake Baikal stands as an isolated event. The discovery of unacceptable pollution levels in this unique lake generated much discussion in the Soviet Union and among the international biological community. However, it did not lead to the development of an organized environmentalist opposition in the Soviet Union. Thus, although this controversy is sometimes quoted as a step toward environmental awareness in the Soviet Union, it remained an action of disconnected intellectuals (Peterson, 1993).

It was in fact Western scholars following

the political developments in the Soviet Union who eventually made known the environmental problems of that country (Goldman, 1972; Volgyes, 1974; Pryde, 1972). They were able to find evidence both of growing pollution and of mismanagement of resources. While this information contributed to the understanding of the global nature of current environmental problems, at the same time it seemed to imply that even a 'rational', 'socialist' economy can not escape pollution, and may therefore not be a viable alternative to Western capitalism. Thus, it seemed that the problem, after all, was not one of reconstructing society along the correct ideological lines, but of finding ways to solve concrete environmental problems through legislation, regulation, technological development etc. In this way, the environmental destruction in the Soviet Union could now be perceived as undermining the socialist idea in the West.

The Soviets were quick to respond to this development. The earlier Teilhardian tone in the existing literature about nature, with its emphasis on man as a manager of the planet (e.g., Balandin, 1969) was now replaced with a more aggressive tone and action. The strategy of Soviet authors was to reiterate that capitalism is unable in principle to solve environmental problems. Moreover, they also coupled the environmental movement with the antiwar movement. In this way the Soviet Union, despite the Western allegations about pollution, was able to keep the ideological offensive for the time being.

The content of the Soviet ideological response was that the environmental crisis was a particular problem of the capitalist West. Meanwhile, such an environmental crisis could not, by definition, occur in a country with people's ownership of the industry and a scientifically and rationally planned central economy. This, however, was not enough. The Soviet Union and the other "socialist" countries developed a veritable thirst for inventing and passing environmental protection laws (Ziegler, 1987).<sup>9</sup> Some westerners were impressed with such



strong legislation, until it was realized that these laws were never implemented. What was worse, pollution data and medical statistics about illness and mortality now became secret. By the end of the 1970s, the whole public discourse about the environment was toned down.

The Russian people responded to this trick of their government in a traditional way - with underground literature. The most famous samizdat book was written by a well-informed Soviet writer, who used the pseudonym Boris Komarov.<sup>10</sup> Its title was *The Destruction of Nature in the Soviet Union* (Komarov, 1980). Ever since the early 1970s it had been known in the West that the Soviet Union had dangerous levels of pollution (Volgyes, 1974). Komarov's account seemed to confirm the worst expectations. Still, the official propaganda denied the allegations and kept the people of Eastern Europe and the Soviet Union in the dark. However, at this point another development happened in the West. Green movements and parties began to emerge.

This created a problem for the Communist regimes. The environmental movement was difficult to cope with. The regime's old stereotypical scientific answers did not work any longer in this case, where science and technology themselves were said to have created the mess. Green movements began to appear also in Eastern Europe and began to grow with the ascent to power of Gorbachev and the times of glasnost and perestroika (French, 1990). As it turned out later, many of these Green movements evolved into nationalist movements (Goldman, 1992; Fisher, 1989). With the fall of the Berlin wall in 1989, it was possible to obtain more information about the situation in the Soviet Union and Eastern Europe. What the Western analysts encountered there of environmental destruction outdid their imagination. After seeing the pollution there, they began to speak of 'Ecocide' (Feshbach and Friendly, 1992; Stanglin, 1992).

It is now known that in recent decades the life expectancy in the Soviet Union decreased in contrast to the world trend. There

are whole disaster areas, where the soil and the water are contaminated and human health is in danger (this is not taking into account Chernobyl, which is the epitome of a man-made disaster). Yet the analysis gives some hope. In the Soviet Union the polluting industry is localized in certain areas and there are regions that are not polluted (Peterson, 1993). The decrease in military production also will eliminate some of the pollution. Yet, Eastern Europe and Russia are stuck for years with obsolete technology and they do not have the money and resources to clean up and buy better machinery.

The changing political situation and demilitarization in the Eastern bloc may thus be good news for the environment. However, it represents bad news for the Green movements in Eastern Europe and the Soviet Union. They are no longer the only form of political dissent now that democracy has made its way in Russia and the neighboring countries. In fact, the environmentalist movements may have functioned as the sole legitimate fora for political activists at the time, with the same leadership ambitions later finding their "proper" political channels. It could also be argued that the populations in these countries have simply not yet developed an environmental awareness of the Western type (cf. Stanglin, 1992). It is easy to understand that economic hardships drive the attention away from the more invisible pollution problem.

### **The Globalization of Environmental Concerns**

A typical feature in the environmental debate in the West is that when a particular issue stops yielding, the topic shifts, e.g., from endangered species and pollution to biodiversity and global warming. A good example of the gliding focus is the Global Cooling controversy. Who now remembers that? A brief check shows that it was some of the very same scientists that stood behind the argument of global warming who

some time earlier were champions of the total opposite: global cooling. Even the National Academy of Sciences in 1975 published a report warning about the coming of a new Ice Age (Douglas, 1975). Thus, new battlegrounds are found and new 'irreconcilable' controversies appear, even as matters turn upside down and predictions do not come true.

Despite the deep suspicion of science and technology which can be perceived among many radical environmentalists, science and technology form in fact an important part of the overall equation. It is, after all, science which provides the needed data for the activists' 'scientific' arguments. If one can perceive an overall trend in the developing environmental discourse it would be one of globalization of the issues and increasing intractability of the problems. Why is that? One reason is that science and technology are in fact all the time responding to the environmental challenges: the Great Lakes and the Thames river are now reasonably cleaned up, the London smog that still in 1952 killed thousands of people is gone because of more clean-burning fuels, the endangered bald eagle is back, and so on. Even the criticized CFSs found a solution in HCFCs and HFCs<sup>11</sup> (In response to the scare of the ozone hole over, 128 countries have ratified the so-called Montreal protocol, aimed at phasing out the two main CFSs by 1996, Zimmer, 1994).

But as also noted, as soon as one problem is solved or contained by science, another one appears. Instead of seeing the present "no escape" situation for man as a challenge to develop better technologies and policies, sometimes it seems as if the real aim of environmentalist critics is to imply that man cannot do anything (for the articulation of such a position, see e.g., McKibben, 1989). The media cooperate here: real scientific and technological successes are not particularly publicized; for some reason bad news make better press. It may be that the real reason for recurrent jeremiads about mounting environmental problems is that many radical environmentalists do not trust

that anything good can in principle come out of technological, economic or legislative solutions. They know exactly what should be done: change the system.

When Western scholars and Eastern dissidents pointed out that the Soviet bloc had the same problems as the rest of the industrialized world, if not worse, environmental issues became assault weapons in the Cold War. Many have assumed that these critics not only exposed the Soviet Union but undermined a leftist ideal in general. However, this does not seem to have happened in the West. Western environmentalist journals continue their socialist undertones. The reason may be that from the point of view of many Western left-wing groups, the Soviet Union is an example of large-scale industrialism; socialism and anarchism are totally different. Whatever the beliefs concerning the Soviet Union as a "true" test of socialism, today the problem is no longer one of opposition between East and West. Already before the Rio summit, it became clear that it is now a question of opposition between North and South. The problem is on a global scale: between rich and poor, North and South, Atlantic vs. Pacific etc. (cf. Graedel and Krutzer, 1989: 20; Smil, 1993a; Asiaweek, 1994)

Environmental problems now are the concern of every country in the world. There are, however, various national particularities which distinguish the situation in each country. Almost half of the population of the world lives in two Third World super-states: China and India. They are determined to modernize and rapidly increase their industrial production. According to the *Economist* (May 28, 1994), in 20 years from now or by 2010, these two countries will be the major centers of industry and the major polluters of the world. According to a United Nations panel, China is indeed predicted to emit more carbon dioxide by 2025 than the current combined total of the United States, Japan and Canada (Lenssen, 1993). This brings forth a new perspective in environmentalism. The pollution of the planet may turn out to be not a problem of the North

but of the South. This is already causing problems in international relations. According to *Asia Week* (quoted in *World Press Review*, May, 1994: 50), the Western insistence that other countries follow the environmental standards of the First World may put enormous stress on the developing economies, preventing their chances of getting rich. *Asia Week* thinks that this is one way for the West to continue keeping its supremacy.

Twenty years ago Maoist China was denying that it had any environmental problems. After Mao's death a rapid economic development followed and today's China combines an expanding unsophisticated industry with great density of population. According to some studies (Smil, 1993b), this is very soon going to put a limit on China's economic growth, due to the enormous social costs of pollution. Cleaner technologies are expensive and their adoption may slow down this country's development.

India, an unusual example of a democracy in the Third World, also pursues programs of modernization, which are here paralleled by an existing environmental debate. There are various environmental actions from the grassroot feminist movement "Hug a Tree" to academic work that brings the Third World perspective in environmental discourse. Some Indian authors also promote the idea that environmentalism is used by Western governments to interfere with the internal affairs of Third World Countries (e.g., Guha, 1989)

A third region where environmentalism has acquired a particular form is Latin America. The radical groups in many Spanish-speaking countries have their support in the peasantry. They promote environmentalist and "ecological" ideas (social ecology), related and rooted in the anarchist and socialist brands of Western environmentalism. The radical agenda is to preserve rural communities from being destroyed and incorporated in a modern capitalist society. The problem is especially acute in Mexico, which is undergoing restructuration after the NAFTA agreement. The open border means that the

American agribusiness will sell cheap food, driving the Mexican peasants to the cities.

Another case in Latin America is Brazil, which like India, is a strong centralized state, committed to development. Despite the general outcry about the destruction of the rainforest, the Brazilian government for a long time denounced foreign attempts to interfere with its decisions. The tragic fate of the activist Chico Mendez, who died in 1988, shows how difficult it is to change public attitudes and governmental policies (see Maxwell, 1991; Ghazi, 1994).

### **Balancing the Discourse: From Radical Activism to Professional Problem-Solving**

The environmental problems which reached dangerous levels in the 1960s, produced a variety of outcomes. Along with the radical social critique to which these problems gave a fresh impetus there were developments in other areas. In many countries environmental legislation appeared, which gave status and recognition to the protection of nature and human health. A whole environmental science evolved, dealing with the monitoring of pollution, ecosystems, endangered species and most recently biodiversity. Along with legislation and administration a green economic theory is developing, which tries to find economic mechanisms for including natural resources and their protection in their overall accounting procedure ("internalizing the externalities", see e.g., Anderson and Leal, 1991).<sup>12</sup> In spite of all radical critique and media hype, there are now recognized professional fields and academic discourses where the issues of environmental protection continues to be systematically dealt with.

Environmentalism is also coming to the international relations agenda. The rich countries, some of which are sparsely populated, such as Australia, Canada, and the United States, can afford to protect nature and set aside wilderness reserves, and to expect other countries to follow this trend.

However, 90 % of the human population lives in poor developing countries, and if they are going to go through the same kind of economic development as the West, there will be real danger for the planet. This is a problem which technology could potentially resolve, so that the newly industrializing countries will be able to have cleaner and better technologies than the West had during its Industrial Revolution.

Another newly emerged field is environmental diplomacy. Since many environmental problems transcend national and regional borders, this becomes an international issue. Third World countries have difficulties coping with the standards evolving in the West. Furthermore, attempts to dump dangerous waste in cash-hungry poor countries have been in the focus of the international community after such waste-dumping practices have been exposed by Western observers.<sup>13</sup> However when Western observers have tried to speak in defense of the rainforest and other internationally important ecosystems, this has been perceived as an interference in internal affairs by the countries involved.<sup>14</sup>

In spite of controversies and setbacks, it seems that an environmental consensus is emerging. In the 1990s, it is getting increasingly difficult to command attention by invoking environmental scares. Political parties which resorted to this in the 1980s, lost in the 1990s. The discourse acquires more complex forms and requires more knowledgeability and professionalization of the participants (see e.g., Anderson and Leal, 1989; The Environmental Careers Organization, 1993). To this one can add a growing economic dimension. It is now possible to speak of a developing environmental economy and environmental economic theory. One of the central problems here is how to transform common goods into private property. Garrett Hardin (1968; 1993) put his finger on the mechanisms whereby common ownership may easily lead to depletion of resources (overgrazing, overfishing) or pollution of the environment. Among current measures used for combatting the "tragedy

of the commons" are water and fishing rights and one of the more innovative ideas is the notion of tradable "pollution permits". The basic point here is that instead of regulation by bureaucratic agencies, regulation would take place through market mechanisms, which would also prevent pollution and depletion of resources (see e.g., Stavins and Whitehead, 1992).<sup>15</sup>

The underlying philosophy of many suggested measures is that it is better to try to work with tendencies which seem to be in people's immediate and "natural" interest, rather than hope for people to radically change their ways (see especially Matt Ridley and Bobbi Low on "selfish" ways in which people can in fact be made to protect the environment, Ridley and Low, 1993). Thus, the most profound difference between sometimes apocalyptic-sounding radical environmentalists and the rising tide of environmental professionalism may be the optimistic "can-do" attitude of the latter. On the other hand, without the formers' relentless uncovering of environmental dangers, the latter would not be in business in the first place.

#### NOTES:

1. The recent (probably groundless) scare of cancer-causing electromagnetic fields (Deutsch, 1994) is a good example of the continuous public awareness of invisible dangers. Another example of invisible risk at low-level concentrations is the "sick building syndrome", whose most famous manifestation was the "Legionnaire's disease", which killed 29 American veterans when deadly bacteria got into a hotel's airconditioning system (Watts, 1993).
2. Not everybody accepted Ehrlich's theories. One of the most adamant opponents was Barry Commoner, who suggested that the fault lay not in the relationship between the growing population and dwindling resources, but instead in the very structure of capitalist society (Commoner, 1971).
3. In the 1970s, so many acts aimed at protecting the environment were passed that among industrialists there was a complaint of "overregulation". A major step was the foundation of the Environmental Protection Agency in 1970. Regulation was achieved among other things through the Clean Air Act, 1970, the Occupational Safety and Health

- Act in 1970, The Environmental Pesticide Control Act in 1972, the Safe Drinking Water Act, 1974, the Toxic Substance Control Act in 1976 (Goldfarb, 1993).
4. Interestingly, some ardent defenders of the idea of the cooling climates later became supporters of global warming. This is the case particularly with Stephen Schneider (compare Schneider, 1976 and 1989 a,b). In 1975 the National Academy of Sciences warned of the possible advent of a major ice age (Douglas, 1975). In 1991, however, a new NAS report concluded that the predicted variations in the Earth's temperature are actually quite small, and that humanity will be able to adapt quite well to any minor climate changes (National Academy of Sciences, 1991).
  5. E.g., Winckler, 1992, argues for the necessity of completely abandoning the idea of individual endangered species and focus on whole ecosystems instead.
  6. Furthermore, a critique of the critique has developed, represented by e.g., such books as Edith Efron's *The Apocalypitics* (1984) and Dixie Lee Ray's *Environmental Overkill* (1993).
  7. See e.g., Philip Shabecoff (1993), *Fierce Green Fire: The American Environmental Movement*; Kirkpatrick Sale (1993), *The Green Revolution: The American Environmental Movement 1962-1992*; Carolyn Merchant (1993) *Radical Ecology*, and John McCormick (1989), *Reclaiming Paradise: The Global Environmental Movement*. These are examples of overview books which present the basic concerns, philosophies and typical activities of the many different organizations that are usually lumped together under the umbrella expression "the environmental movement".
  8. According to a recent report, in addition to older societies like the Audubon society or the National Wildlife Fund, there are 200 new national and 3000 new local organizations in the United States (Goldfarb, 1993: iv)
  9. There existed earlier legislation about medical norms and hygienic standards concerning conditions in cities and in the workplace.
  10. Boris Komarov later emigrated to Israel and wrote under the name Ze'ev Wolfson.
  11. For a skeptical view, see for example Doyle (1992). According to him, HCFCs and HFCs are not a solution.
  12. Externalities are social costs which are in fact created by businesses, but which they are not paying for. A major complaint of environmentalists has been that businesses have not taken into account the environmental consequences of their activities (e.g., Stavins and Whitehead, 1992). Under pressure to "internalize", some businesses are moving to countries with more lenient environmental laws.
  13. For the waste trade with Eastern Europe, see Manser (1994).
  14. For instance, at the U N Conference on the Human Environment in Stockholm 1972, Brazil stated it had the right to cut down its rainforests (Smil, 1993b, p. 6). And today, according to a article in *The Observer*, "there is hostility to Western attempts to control development and resentment of the 'privileges' of the indigenous Indians, who have been given land rights over 11 percent of the country although they make up 0.2 percent of its 150 million inhabitants. Amazonia's governors are generally pro-development." (Ghazi, 1994).
  15. "Pollution permits" are maximum quotas for acceptable pollution in a certain region. The owner of a permit can sell part of it to another factory, assuming that both stay within the limits of the pollution quota assigned to the permit. In this way, the overall pollution for the region remains constant in spite of industrial development. Despite the nickname "pollution permits", this legislation in fact stimulates the introduction of cleaner technologies. ("Pollution permits" or tradable pollution credits, were first introduced in a market-based approach to controlling acid rain in the Clean Air Act Amendment in 1990; Stavins and Whitehead, 1992).

## REFERENCES:

Ad Hoc Committee on the Relationship between Land Ice and Sea Level  
1985 *Glaciers, Ice Sheets, and Sea Level: Effect of a CO<sub>2</sub>-induced Climatic Change*. Washington, D. C.: US Department of Energy.

Ager, D.  
1993 *The New Catastrophism*. Cambridge: Cambridge University Press.

Anderson, T. and Leal, D.  
1989 *Free Market Environmentalism*. San Francisco: Pacific Research Institute/Westview Press

Balandin, R.  
1969 *Planeta obretayet razum* (The planet acquires reason). Minsk.

Begley, S.  
1991 "Audubon's empty nest." *Newsweek*, 117, June 24: 57.

Boochkin, M.  
1991 *The Ecology of Freedom*. Montreal: Black Rose Books (revised edition from 1982 Cheshire Books edition).

Bradbury, J.  
1989 "The policy implications of differing conceptions of risk." *Science, Technology and Human Values*, 14, 4: 380-399.

Callenbach, E.  
1975 *Ecotopia*. Berkeley, CA: Banyan Tree Books.

Carson, R.  
1962 *Silent Spring*. Boston: Houghton Mifflin.

Choucri, N.  
1991 *The Global Environment and Multinational Corporations*. *Technology Review*, 94, 3, April 1: 52-59.

- Commoner, B.  
1971 *The Closing Circle: Nature, Man, Technology*. New York: Knopf.
- Commoner, B., Corr, M. and Stamler, P.  
1971 "The causes of pollution." *Environment*, April 1971
- Deutsch, S.  
1994 "Electromagnetic field cancer scares." *The Skeptical Inquirer* 18, Winter 1994: 153-6.
- Douglas, J.  
1975 "Climate change: chilling possibilities." *Science News*, March 1: 138.
- Douglas, M. and Wildawsky, A.  
1982 *Risk and Culture*. Berkeley, CA: The University of California Press.
- Doyle, J.  
1992 "Hold the applause: a case study of corporate environmentalism." *The Ecologist*, 22, 3, May/June 1992: 84-85.
- Efron, E.  
1984 *The Apocalypitics*. New York: Simon and Schuster.
- Ehrlich, P.  
1968 *The Population Bomb*. New York: Ballantine Books.
- Ehrlich, P. and Ehrlich, A.  
1991 *Extinction*. New York: Random House.
- Ehrlich, P. and Wilson, E.  
1991 "Biodiversity Studies: Science and Policy." *Science* 253: 758-62.
- The Environmental Careers Organization  
1993 *The New Complete Guide to Environmental Careers*. Washington, D.C.: Island Press.
- Feshbach, M. and Friendly, A. Jr.  
1992 *Ecocide in the U.S.S.R.* New York: Basic Books.
- Fisher, D.  
1993 "The emergence of the environmental movement in Eastern Europe and its role in the revolutions of 1989." Pp. 89-113 in Barbara Jancar-Webster (ed.), *Environmental Action in Eastern Europe: Responses to Crisis*. Armonk, N.Y.: M.E. Sharpe.
- French, H.  
1990 "Green revolutions: environmental reconstruction in Eastern Europe and the Soviet Union." *Worldwatch Paper Number 99*, November 1990.
- Ghazi, P.  
1994 "The continuing fight for the Amazon." *The Observer*, quoted in *World Press Review*, September 1994, p. 46.
- Glacken, C.  
1967 *Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century*. Berkeley and Los Angeles: University of California Press.
- Global 2000 Report to the President  
1980. Washington, D.C.: Government Printing Office.
- Goldfarb, T.  
1993 "Introduction." Pp. xii-xxi in Theodore Goldfarb (ed.) *Taking Sides, Clashing Views on Controversial Environmental Issues*. Guilford, CT: Dushkin Publ.
- Goldman, M.  
1972 *The Spoils of Progress: Environmental Pollution in the Soviet Union*. Cambridge, MA.
- Goldman, M.  
1992 "Environmentalism and nationalism: an unlikely twist in an unlikely direction." In Massey Stewart (ed.), *The Soviet Environment: Problems, Policies and Politics*. Cambridge University Press: Cambridge.
- Goldsmith, D.  
1985 *Nemesis, The Death Star and Other Theories of Mass Extinction*. New York: Berkley Books.
- Graedel, T. and Krutzen, P.  
1989 "The changing atmosphere." Pp.13-23 in *Readings from Scientific American, Managing Planet Earth*. New York: W. H. Freeman & Co.
- Grossman, K.  
1993 "Environmental racism." Pp. 326-334 in Sandra Harding (ed.), *The 'Racial' Economy of Science*. Bloomington: Indiana University Press.
- Guha, R.  
1989 "Radical American environmentalism and wilderness preservation: A Third World Perspective." *Environmental Ethics*, 11, Spring 1989: 71-83.
- Houghton, J. et al. (eds.)  
1990 *Climate Change: The IPCC Scientific Assessment*. Cambridge: Cambridge University Press.
- Hall, Gus  
1970 *Ecology. Can We Survive under Capitalism?* New York: International Publishers (Little New World paperback series).
- Hardin, G.  
1968 "The tragedy of the commons." *Science* 162, 13 December: 1243-48.
- Hardin, G.  
1991 "Second thoughts on the tragedy of the commons." Pp. 145-151 in Hermann Daly and Kenneth Townsend (eds.), *Valuing the Earth*. Cambridge, MA: MIT Press.
- Kennedy, P.  
1993 "The decline of sovereignty and the birth of the global village." Public lecture, Chicago Humanities Festival IV, Northwestern University Law School, Nov. 14.
- Komarov, B.  
1980 *The Destruction of Nature in the Soviet Union*. White Plains, N.Y.: M. E. Sharpe.

- Lenssen, N.  
1993 "All the coal In China." *World Watch*, March/April 1993: 22-29.
- Lochhead, C.  
1990 "Global warming's heated debate." *Insight*, April 16.
- Lorenz, E.  
1979 "Predictability: does the flap of a butterfly's wing in Brazil set off a tornado in Texas? Paper presented at the American Association for the Advancement of Science Annual Meeting, Houston, 3-8 January 1979.
- Marples, D.  
1993 "Chernobyl's lengthening shadow." *The Bulletin of the Atomic Scientists*, September 1993: 38-43.
- Manser, R.  
1994 "Going west: market reform and the environment in Eastern Europe, the first three years." *The Ecologist*, 24, 1, January/February 1994: 27-32.
- Maxwell, K.  
1991 "The mystery of Chico Mendez." *The New York Review of Books*, March 28 1991: 39-48.
- McCormick, J.  
1989 "Reclaiming paradise: the global environmental movement." Bloomington: University of Indiana Press.
- McKibben, B.  
1989 *The End of Nature*. New York: Anchor Books.
- Meadows, D., Meadows, D., Randers J. and Behrens W.  
1972 *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind*. New York: A Potomac Associates Book, New American Library.
- Merchant, C.  
1993 *Radical Ecology*. Cambridge: Cambridge University Press.
- National Academy of Sciences  
1991 *Policy Implications of Greenhouse Warming: The Synthesis Panel*. Washington, D.C.: National Academy Press
- National Wildlife Federation  
1992 "24th Environmental Quality Index." *National Wildlife*, February/March 1992: 33-40.
- Peterson, D.  
1993 *Troubled Lands: The Legacy of Soviet Environmental Destruction*. Boulder, CO: Westview Press.
- Pryde, P.  
1991 *Environmental Management in the Soviet Union*, Cambridge: Cambridge University Press.
- Raup, D.  
1986 *The Nemesis Affair: A Story of the Death of the Dinosaurs and the Ways of Science*. New York: W. W. Norton & Co.
- Ray, D.  
1993 *Environmental Overkill*, New York: Harper Perennial.
- Ridley, M. Low, B.  
1993. "Can selfishness save the environment." *The Atlantic*, September, 1993: 76-86.
- Rubin, E. et al.  
1991-1992 "Keeping climate research relevant." *Issues in Science and Technology*, 8, Winter 1991-92: 47-55.
- Sale, K.  
1993 *The Green Revolution: The American Environmental Movement 1962-1992*. New York: Hill and Wang.
- Schell, J.  
1989 "Our fragile earth." *Discover*, 10, October 1989: 44-7.
- Schneider, S.  
1976 *The Genesis Strategy*. New York: Plenum Press.
- Schneider, S.  
1989a *Global Warming: Are We Entering the Greenhouse Century?* New York: Vintage Books.
- Schneider, S.  
1989b "The changing climate." Pp. 13-23 in *Readings from Scientific American, Managing Planet Earth*. New York: W. H. Freeman & Co.
- Shabecoff, P.  
1993 *A Fierce Green Fire: The American Environmental Movement*. New York: Hill and Wang.
- Simon, J.  
1981 *The Ultimate Resource*. Princeton, N.J.: Princeton University Press.
- Simon, J.  
1983 "Life on earth in getting better, not worse." *The Futurist*, 17, August: 6-12.
- Simon, J. and Kahn, H.  
1984 *The Resourceful Earth: A Response to Global 2000*. Oxford: Basil Blackwell.
- Singer, S.  
1992 "Warming theories need warning label." *Bulletin of the Atomic Scientists*, 48, June 1992: 34-39.
- Smil, V.  
1993a *China's Environmental Crisis*. Armonk, NY: M.E. Sharpe.
- Smil, V.  
1993b *Global Ecology*. London and New York: Routledge.

- Smith, N., Williams J. and Plucknett, D.  
1991 "Conserving the tropical cornucopia." *The Environment*, 33, 6, July/August 1991: 7-9, 30-32.
- Solbrig, O.  
1991 "The origin and function of biodiversity." *Environment*, 33, 5, June 1991: 16-20.
- Stanglin, D. et al.  
1992 "Toxic wasteland." *U.S. News and World Report*, April 13, 1992: 40-46.
- Stavins, R. and Whitehead, B.  
1992 "Dealing with pollution." *Environment*, 34, 7, September 1992: 7-11, 29-42.
- Stewart, M. (ed.)  
1992 *The Soviet Environment: Problems, Policies and Politics*. Cambridge: Cambridge University Press.
- Volgyes, I.  
1974 *Environmental Deterioration in the Soviet Union and Eastern Europe*. New York: Praeger.
- Watts, L.  
1993 "Diagnosis: sick building." *Harvard Review*, September-October 1993: 13-14.
- White, L.  
1967 "The historic roots of our ecological crisis." *Science* 155: 1203-7.
- Wilson, E.  
1984 *Biophilia*. Cambridge, MA: Harvard University Press.
- Wilson, E.  
1989 "Threats to biodiversity." Pp. 49-59 in *Readings from Scientific American, Managing Planet Earth*. New York: W. H. Freeman & Co.
- Wilson, E.  
1992 *The Diversity of Life*. Cambridge, MA: Belknap Press of Harvard University Press.
- Winckler, S.  
1992 "Stopgap measures." *The Atlantic*, 269, January 1992: 74-78.
- World Commission on Environment and Development  
1987 *Our Common Future*. Oxford: Oxford University Press.
- Zehr, Steven  
1994 "Accounting for the ozone hole: scientific representations of an anomaly and prior incorrect claims in public settings." *Sociological Quarterly*, 35, 4 (forthcoming).
- Ziegler, C.  
1987 *Environmental Policy in the USSR*. Amherst: University of Massachusetts Press.
- Zimmer, C.  
1994 "Good news and bad news." *Discover*, 15, May 1994: 26-28.
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