WHY DOES THE ENVIRONMENT DETERIORATE?

And what can be done about it

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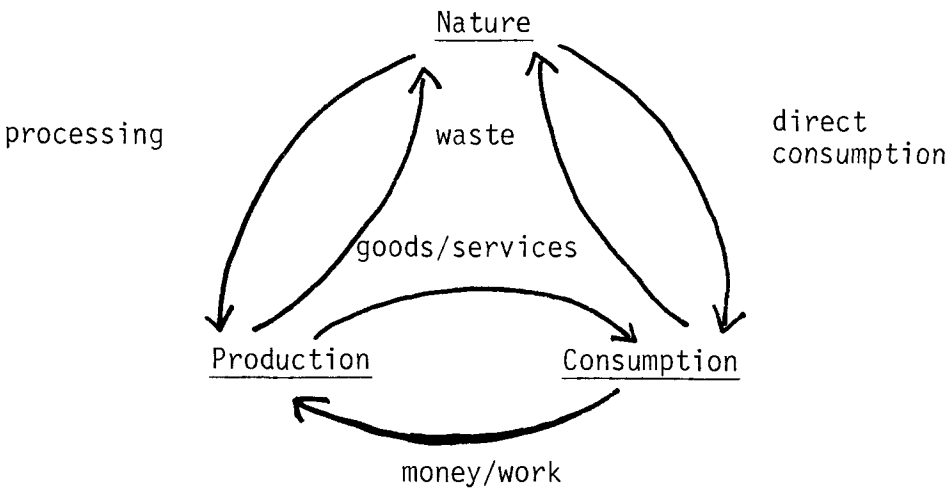
1. Why does the environment deteriorate?

Apart from some partial victories the environmental degradation continues.[1] Why this is so is not so difficult to understand. The reason lies partly in our economic systems and partly in our ability, through the scientific-technical revolution (STR), to bend nature, to process her more than ever before so as to yield goods and services - that sometimes may prove to be "bads" and "disservices", in disguise. It does not seem, incidentally, to be a question of whether that social system is "capitalist" or "socialist" - almost regardless of how those terms are defined. The decisive causal factors are much simplier, actually so simple that for that very reason they are often overlooked in what passes as "sophisticated" analysis. They are: (1) the transition from limited, small economic cycles to extended and expanding economic cycles and (2) transition from cyclical to linear ecological processes.

Let us start with the expansion of the economic cycles.[2] By an "economic cycle" is simply meant the way in which Nature, Production and Consumption are linked together:



Matter is taken from nature for direct consumption (water, air; gathering) or indirect consumption via production, meaning processing. Agriculture is one way of processing nature, and no longer a soft one.[3] Matter also comes back to nature, viz., as waste - as

agricultural-industrial waste from production, and household waste from consumption. Thus, nature is the big loser, exchanging her natural/raw/primary materials for waste products. The winners are (hopefully) human beings who stand for the end consumption, and (certainly) those who make a living/profit on the various links in the chain between nature and end consumption. Clearly, had Nature been an economic actor in her own right this would not have worked. Nature would have put up at least as much struggle as human beings over the terms of exchange between the goods/services demanded and the money or work supplied to buy them; the struggle of consumers and workers for cheaper goods and higher salaries. But Nature is patient so she needs good spokesmen before Nature hits back with more than degradation: with total disruption - desertification.

Then there is the second factor: the transition from cyclical to linear ecological processes. The scientific-technical reduction has had two clear consequences:

- to make it possible to process much more raw material from nature than ever before, and particularly more non-renewable resources, from the mineral "kingkom", including water and air. Anorganic resources played relatively speaking, a less important role earlier. The plant/animal "kingdom", the biosphere, that through quicker biological processes is more renewable, is also threatened with extinction of species - however - organic raw materials are also processed more than before.

- to send back to nature waste products in qualities and quantities nature cannot handle, meaning cannot absorb (CO_2), cannot break down (plastic), some of them toxic to human beings and/or other parts of nature (SO_2). Efforts to hide them, or to dilute the contamination prove largely unsuccesful: they show up, sooner or later.

In short, the twin problems of depletion and pollution.(3) At deeper levels of analysis these processes also threaten the very resilience or maturity of eco-systems.(4) Through these processes diversity is reduced and equilibria based on symbiosis break down, among other reasons because of changes in the composition of the systems. The ultimate possible consequence of all of this is desertification, today threatening one fifth of the earth's land surface.(5)

However, as indicated above, this apparent triumph of the natural sciences in helping processing nature to a hitherto unknown extent is not operating alone. We would have only a minor fraction of the problems today if the economic cycles had remained so limited in extension that producers and consumers would themselves have faced the consequences of their own depletion and pollution. The key production/consumption unit in human history, the family farm, has survived through generations for the simple reason that the consequences of irrational householding are visited upon the perpetrators or at least their offspring - a strong argument, incidentally, in favor of hereditary farms so that one cannot run away from the consequences through clear salesmanship. Soil depleted renders poor harvests. Products that are polluted cannot sustain healthy human bodies. And this applies not only to agricultural production but to any type of production: the negative consequences that come home to oneself have a great conscientizing impact.

This does not mean that "enlightened self-interest" has been in the past, a sufficient condition for sound ecological behavior, and it is not necessary as a condition either. All that is said is that it helps tremendously. To point to some important considerations:

- nomadism was based on this insight, but with the conclusion that when the environment was sufficiently depleted - pollution being less important, only "scientific man" has been capable of making waste products nature cannot handle - time had come to select another place for depletion/litering. The places could be on a cycle, ultimately coming back to the point of origin when nature had repaired the damage and the renewal had taken place, thereby negating the predation - as do Mongolian shepherds, with their yurts, today.

- "enlightenment" may have been insufficient: people may not have been sufficiently aware of the harmful consequences of their action; the negative increments per year may have been almost imperceptible, and when cumulative and/or synergistic effects show up as a catastrophe other explanations (e.g. supernatural) may have been found.

- "self" may have a class character: the economic cycles may have been very limited spatially, but the pollution/depletion consequences may have been pushed onto the lower classes in society, in the form of dwindling food resources and a life close to garbage dumps literally speaking;

- priority may have been given to more immediate interests: even the family on a family farm will deplete their own soil mercilessly and eat the grain set aside as seeds when the only alternative seen is starvation.

In the European Middle Ages all these factors were at work.(6) The economic, particularly agricultural, cycles were limited in extension. But the consequences of very irrational ecological behavior were pushed onto the serfs and peasants, who then were faced with starvation, their soil being depleted further. Ulitmately this led to the "nomadism" of the lower layers into cities and to places far away, and of the higher layers into piracy, brigandry, crusades and other efforts to get away. What happened was interpreted in religious terms consistent with medieval mentality. The cataclysm known as the Black Death was related to all of this, as the final coup de grâce.

And yet, in spite of this, it is undeniable that the opportunity given after the Middle Ages - and increasingly so - to build economic cycles so that the harmful consequences in terms of depletion and pollution are not visited upon oneself, has increased tremendously. Commercial capitalism has been followed (perhaps also preceded) by commercial socialism. Cars and car factories can pollute, and nature can be depleted, thousand of miles away from corporate offices, located in beautiful parks where birds still sing and decisions of ecological significance for places far away- for instance by exporting polluting industries as "development aid" - are taken. Exhaust in their air-conditioning shafts of these offices, industrial effluents in their drinking water, and a gradual transformation of that park into wasteland might have been a powerful heuristic if it were seen as linked to corporate action, and not as the pranks of wicked ecological action groups. In the car factory itself it might even be easy to do this: the drinking water could come from the river, downstream of course; the air from the smoke-stack. The class character of the mechanisms that prevent this from happening is rather crucial to the understanding of the whole issue, yet left untouched in typical (inter)governmental analyses. One reason for this is

related to international class structure: "expanding, even unlimited" economic cycles is another way of saying "free trade", meaning the free flow of raw materials, of capital, of labor and of the finished products, whether under private/corporate or public/bureaucratic auspices. But the ecological consequences of that is obvious; to displace the depletion and the pollution to the corners of the world where people are so weak that they cannot protest, and/or to the corners of the geography so far away that nature's protests are not felt - by diluting pollutants in atmosphere, and oceans, or hiding them in caves. Till they make themselves felt, again.

How, then, can we nevertheless feel the consequences? Through exactly the above mechanism of "enlightened self-interest", since there is "only one earth", said to have essentially a space-ship economy. But this type of consciousness is mediated. It is not immediate, like for the farmer destroying his own soil, or the manager drinking his own polluted water. Hence, for the consciousness to be strong, when the economic cycles are expanding, one has to be

very enlightened - through scientific or other knowledge
have an extended self - empathy with other regions, other classes, and with nature located on that expanding cycle (and elsewhere)
have a long-term perspective - solidarity with coming generations

If people had all of this, then much would have been different. But we know perfectly well that only few people can be said to rank high on all three characteristics. And it is not enough to rank high on only two of them. The last two - synchronic and diachronic solidarity - are excellent human qualities but not helpful alone if not backed up by knowledge. Knowledge with only one of these moral qualities very easily leads to refined forms of exploitation into the other corner where the moral light is not shining. A government may well practise socialism at home and exploit other countries ecologically; or there may be intergovernmental cooperation in avoiding the type of ecological harm that hits the higher classes,

pushing it onto the lower classes all around the world, e.g. in the form of very high food prices because of soil depletion.(7) In addition, although one can readily recognize the presence of these three traits, in the many ecological action groups (and among artists, the most sensitive part of humankind, in general), one can just as easily recognize the absence of one, two or three of them in those who decide, in the public or private sector, over the construction of economic cycles. The result is environmental rhetoric, some recycling and cleaning-up exercises. But the environmental deterioration continues as the cycles expand and penetrate more deeply, economically and administratively. And the worst consequences are for future generations.

Thus, our general moves, now slow, now fast, towards local ecocatastrophes (the global ones are still far away)(8) are based on the interplay between the unlimited expansion of economic cycles, and the linear impact of the scientific-technical revolution, or between industrialism and capitalism, private and state, and industrialism, to put it in words that convey almost the same if one thinks of the international character of these two phenomena. One may argue back and forth over the tremendous benefits of these two institutions relative to the tremendous costs involved: exploited nature, exploited people everywhere. Clearly, today very few people, and only in very few places, are willing to contract economic cycles and soften industrialism to the point that rational ecological behavior becomes a must and almost automatic, and not only an ideology. Tomorrow this may change, but the benefits seem to outweigh the costs for most people, and not only for elites. Given that, the prospects for succesful turning of the many negative environmental trends are rather negative, indeed. Major ecocatastrophes are considerably more likely when there is depletion on one end and pollution on the other end of these linear processes - and maturity reduction all over.

To explore this further, let us look at the four different situations that derive from the two key dimensions made use of:

Table 1. Four different contexts for ecological action.

	Economic cycles limited, contracted	Economic cycles extended, expanding
Economic activity is softer on nature- ecological processes cyclical	A	C
Economic activity is harder on nature- ecological processes linear	B	D

From what has been said above it follows that in general we shall have either case A or case D. When economic activities get harder, meaning linear processes with depletion on one end and pollution on the other, the local consequences become so unbearable that the system will collapse. One alternative is back to A. An other is to have the consequences removed, and one way of doing this is to have the cycles expand so that the more unpalatable consequences can be accommodated, simply because they happen far away (the A → B → D sequence in Table 1) However, even with soft activities consequences can be felt far away,[9] for to the man-made economic cycles must be added the non-manmade long-range ecological cycles brought about by the movement of air (winds) and water (rivers, currents). (the A→C sequence in Tabel 1). So, it is essentially case B that is of less interest: that combination is not viable, at least not in the longer run, leading to A or D depending on what is modified. Today that would mean to D - contraction and softness are exceptions. Moreover the transition to D may also be direct from A - as indicated in the figure, as when trade and industrialism go hand in hand.

Case A has, today, a touch of the utopian, but is by and large what the green movement in the first world stands for. It is probably

much more realistic than people commonly believe. It presupposes not less but more, but then also much better science and technology, capable of making do with limited resources, scratching nature gently, using sun, wind and running water and biomass, three-dimensional agriculture, electronic processing, miniaturized industrial processes, recycling and cleaning-up nodes in the cycles.(10) And yet the major asset is not to have to rely on abstractions for ecological action: the consequences, good and bad, come home, literally speaking. For this to be true, however, some conditions have to obtain. There has to be understanding of ecological cycles and how they intermesh with economic cycles. There has to be solidarity within that community, meaning that there must be limits to inequity and inequality, limits to how much the community can be a class or even caste society with the bad consequences displaced downwards. And extreme poverty, disaster, and greed may ruin this, too, giving low priority to ecological considerations. In societies with steep class gradients the gains from the limited economic cycle may easily wash out as the European Middle Ages have shown : there are limits to predation.

Case C is an extension of case A, either because of nature's own action, or because it is found necessary (by whom?) to expand the economic cycles, to trade and exchange with far away places. Essentially this calls at the very least for solidarity with those places, located as they are on same ecological and/or economic cycles. The consequences at least have to be made understood, and vividly. Yellow rain, dark or red snow, poisoned waters have to be felt both by sender and receiver as a link between sender and receiver, a harmful one, so much so that something has to be done about it. Something like a tracer element in an organism, or the tricks geologists make use of to trace underground currents would be useful. Economic/ecological cycles must be seen to be understood; the abstract has to be made concrete. And yet it is clear that from understanding there is no immediate link to positive action, except in a context of empathy. For man-made economic cycles this is not so important: the import of a polluted product may be stopped,

likewise the export of a product based on depletion of non-renewable resources. For the non-manmade ecological cycles brought about by wind and water in motion it is worse; intergovernmental action is needed, based on any mixture of the usual three forms of power: persuasion, bargaining and force. With internationalization of cycles environmental action also has to internationalize, even when the economic activity is relatively soft on nature. Hence the care for international action in this field - it follows from the movements in atmosphere and hydrosphere. But case C is soft, hence easier.

Case D is the tough one, and the typical one. It is doubtful that much can be done to improve this case. There is so much to be gained; in terms of power, profit and privilege from being on top of this type of cycle, specializing in secondary, and more recently in tertiary sectors of economic activities, as is well known. Whether there is much to be gained for those not at the top from this type of activity over which they have very little control is another matter. Hence, the best contribution to environmental protection would probably come about if people could be convinced that systems of types A and C can be at least as effective, particularly in the longer run, in overcoming extreme poverty as societies of type D. To show that, however, other types of expertise is needed than that provided by economists whose narrow thinking is typically geared to hard industrialism (with linear ecological processes) and long distance trade (expanding cycles); processing and marketing being the two pillars on which the abstraction called "economic growth" is built. Critique of case D systems would belong to the key ingredients of a package of environmental action, as would constructive activity to promote systems of case A and C; case B being ruled out by its own logic, but nevertheless empirically frequent.

Today, however, that activity is an uphill fight except in some countries that are more enlightened, less inegalitarian and exploitative of other parts of the world, and far from misery, particularly the Northern European welfare states. And even in these

countries environmental action is needed, for they do engage both in hard industrialism and in extended cycles. The methods typically used to put some constraints on case D are:

- to counteract hard industrialism:

  pollution aspect: criminalization, with detection, fines and other punishment
  depletion aspect: price mechanisms (oil and soil being good examples)

- to counteract transmission to other countries:

  national pollution law extended to international law
  international price mechanisms for the depletion aspect

The contention here is that this will hardly work, for some very simple reasons. Thus, for the polluter what is bad about pollution becomes no longer the toxic impact, but the possibility of being punished, which ultimately is a question of being detected. And that, in turn, easily becomes similar to the relatively parallel field of arms production and control: it is so much easier to conceal and cheat than to control and detect. To get out at night with a truck with an open valve, letting the toxic flow out slowly while the truck is driving fast; or the same for a ship - particularly in international waters - is so much more easy than to detect such things.(11) The detected dumps for toxic waste products are of course, only a small fraction of those really existing. Thus, it is the industrial process itself that has to be changed through softer, more cyclical, technologies, and the economic cycle itself that has to be limited enough to be understood, and controlled by those directly concerned.

Similar arguments apply to the price mechanism: from being a question of preserving the basis of sustenance for life on earth it becomes a question of guaranteeing that there will be people able to pay. And that, in turn, becomes a question of creating a society so that the demand becomes inelastic within a range of prices: people simply have to have even an increasingly expensive commodity, regardless of price - one key example being oil - if it has been made sufficiently indispensable, with no easily available alternative.

And soil is an equally good example: prices for the use of cultivable soil to build dwellings or factories may be increased to discourage people from using the ground that way. The net result is likely to be more expensive housing, and more expensive industrial products; with obvious class implications. In short, efforts to let the consequences come home to the polluter and depleter by creating an artificial micro-environment around that person with its rewards and punishments are not likely to yield environmentally beneficial consequences, except in particularly law-abiding and economically rational societies. The burdens will simply be pushed on to the consumer - as is usually the case. It is the social construction of case D itself that is problematic, even wrong. And case D is typical.

So far the exploration of why the environment deteriorates has been linked to the ever-expanding economic cycles, engendering production and consumption processes that not only deplete and pollute nature but also are so complicated and far apart socially and spatially that they become exceedingly difficult both to understand and to control. Obviously there are also many benefits from these expanding economic cycles: more than compensating for the costs at least for those on top of the cycles.(12) But the costs in terms of direct destruction of nature, and thereby reduction of the basis of sustenance for human beings today and tomorrow, are tremendous.(13) However, all of this becomes much worse when to "economic cycle" is added a special case: the cycles of military activity.(14) There are two of them: one dealing with the production of the means of destruction (arms, in a broad sense), and the other dealing with their use, with the production of destruction itself (war). Consumers of the first cycle of arms production and arms trade are above all governments but also all kinds of anti-governments; the "consumer" of the second cycle are, ultimately, everything and everybody, the environment and the human-made environment, people here and everywhere, now and in the future.(15) Military cycles today also show unlimited expansion, not only for the production and consumption of the means of destruction - very similar to other modern economic

cycles, only growing faster[16] - but also for the production and consumption of destruction itself. Conventional weapons are more like limited economic cycles: they hit here and now. But nuclear weapons and other weapons of mass destruction recognize no such limitations: winds, rivers and currents may carry the fall-out very far, and destructive radiation is long lasting. In general terms the biosphere is more vulnerable than the lithosphere, and in the biosphere animals (and humans) are more vulnerable than plants, and higher plants more than lower plants. The possible survivors would be lower plants and animals and micro-organisms. But atmosphere and hydrosphere are also vulnerable, meaning that a nuclear war makes large parts of the world devoid of human beings, uninhabitable and life-less, with only very long term recovery prospects. And this is only counting the effects on the environment. Social and cultural effects are at least equally devastating.[17]

If modern war leads to environmental deterioration it can probably also be stated that environmental deterioration may lead to war. Resources for the sustenance of human life become increasingly scarce. The capacity of most people, in power or not, to tolerate this when it "only" hits people much lower down and far away is, as mentioned, impressive. But the environmental deterioration brought about by what today is "normal" economic activity, including arms production, will sharpen the struggle for scarce resources, oil being one example, water probably soon becoming another. If military destruction is added to this the wars become self-reinforcing, vicious circles. Destruction of resources makes resources more scarce; scarcity leads to more conflict, and easily to more destruction. This, then comes on top of the general degradation.[18]

2. And what can be done about it?

The question, then, is what to do about all of this. This is a question of strategy, and the question of strategy is always a problem of why to do it, what to do, who shall do it, how, when and where, at whose costs/benefits.[19]

The question of why is not difficult to answer. There is a very high level of verbal consensus in the world about this already, not the least due to UNEP's excellent work in articulating the problem, [19] in describing it perhaps rather than analyzing it - the latter being difficult given UNEP's closeness to governments and theirs' to corporations, and direct and indirect dependence on funds from the biggest depleters and polluters. The world is simply going down-hill environmentally speaking, with some exceptions in terms of reversals of trends such as the pollution of rivers and lakes. Such national and international, governmental and non-governmental work of information certainly has to continue and to be stepped up; like in the excellent educational center Los Molinos in the province of Alicante, Spain.[20] But it should also undergo a qualitiative change. Data on levels of depletion and pollution are indispensable. But more analysis is needed that could lead to a deeper understanding of why there is so much environmental deterioration. One form of presentation here would be in terms of economic cycles, showing very clearly who processes nature from where into products for the consumption by whom, and with what environmental effects for producers, consumers and others. Extremely useful at this point would be a law to the effect that products should carry an environmental impact statement, possibly with a warning, like the warning on cigarette packs and advertising in many countries.[21] For both purposes training in seeing environmental deterioration in terms of cycles and processes, and not only as states of affairs is indispensable. The language of discourse should be not only ppm and rates, but flows on social and spatial maps, indicating clearly who are the producers and who the consumers of the deterioration. Yearbooks ranking identified and named countries and corporations in terms of their contribution to environmental deterioration and what they do to improve the situation could also be very useful.

The question of what to do is more problematic. It has been stated above that the best situation is probably when the

economic cycles are limited, and the economic activity is soft on nature so that the ecological processes are cyclical (Case A). At the same time there has to be understanding, solidarity, and neither extreme poverty, nor disaster, nor greed. Pure (theravada) buddhist societies may be examples of this; green wave communities in the West likewise - and there are many others. Hence work for as much social transformation as possible in that direction will not only lead to the abatement of the deterioration, but to removal of causes. But the general trend in the world, except for some small areas, is as mentioned in the opposite direction - ever expanding economic cycles and economic activities that are hard on nature, and through that, and also directly, on people. Hence, what to do becomes a question of designing double track goals and strategies. Small is beautiful, among other things because smallness mobilizes the enlightened self-interest in environmental matters of everybody, like it does inside a house, in a family.

But some big is necessary, not only because of the prevalence of case D economic systems, but also because of Nature's own ecological cycles, leading to case C even when activities are soft. Consequently a good world, environmentally speaking, would probably be one where a much higher percentage than today of the total economic activity is run on a case A basis, and that which is run on a case D basis is done in such a way that the polluters/depleters themselves have to pay for environmental restoration, repairing the damage, and do so in competition with products from case A economies. This last point is absolutely essential to prevent that increased costs are pushed onto the consumers. Such a policy could at the same time serve as a stimulus to that type of economy, leading to much more work on environmentally sound technologies. And to this should then be added the necessity not only of a good structure, but also of an enlightened population: understanding and solidarity, with nature and humans, today and tomorrow. One without the other, education without structure or vice versa, never works well.

The question of who shall do it obviously calls for many answers. It calls for actors at all levels - local, national, international. And of all types: public as well as private, and among the latter associations as well as corporations (indeed). It is actually more complex than the usual division into governmental and nongovernmental actors, among other reasons because the local level is so important and so are the corporate (business) actors. However, there is another distinction that also has to be kept in mind: between those who produce environmental deterioration, public or private, and those who are the consumers or victims of it. Most people are in the grey zone in-between, neither direct producers nor explicit, direct victims. It is true that when producers and consumers of toxic pollutants are brought close to each other (as in the Minimata, Seveso and thalidomide cases) the situation gets tense and confrontational. But from the generally agreed to idea that the perpetrators of environmental crimes should be brought to court (rather than into positions of power where environmental control is concerned) it does not follow that the victims could not be made more positive use of. They have suffered the consequences on their own bodies and hence developed a level of consciousness different from that which comes from reading and watching. Personal experience leads to experienced persons - for action.(22)

It is important that actors working for a safe and sound environment can cooperate or at least coordinate. Excellent work has been done to achieve this: UNEP at the governmental level, and the Environmental Liaison Centre (ELS, also in Nairobi) at the nongovernmental level. Conferences scheduled so that the two can interact can be very significant. It may well be, however, that the NGOs should see themselves less as pressure groups on the governments, and more as actors in their own right. They are often closer than governments to the local level where truly sound environmental practices can best be realized, for the reasons given; this is where case A systems have to be built. They are engaged in countless small and big experiences and experiments, sometimes behind, very often

ahead of governments that are big and move slowly, if at all - spending much of their time simply trying to catch up conceptually, and with data.[23] Most important among the NGOs are probably trade unions, political parties and churches since they constitute links between the local and the national, the individual and the public. All the NGOs should of course use conferences to bring pressure on governments, but equally much just try to inspire each other, exchange experiences and experiments, mobilizing more people, doing the things, not only admonishing governments to do this and that which governments may be unwilling/incapable of doing. Governmental conferences have their own logic, chaining resolutions and reports to each other in time. The strength of the NGO level is that it is less formal, often in a position to carry out some action, at least at the local level, immediately. NGOs should build on this potential, thus compensating for some of its lack of formal power. Hence, more important than the parallel coupling to governmental conferences is the coupling - in series - of NGO conferences to each other, over time.[24]

The question of <u>how</u>, <u>when</u> and <u>where</u> to engage in environmental action can best be answered in the same way as the question of <u>who</u>: in the spirit of <u>diversity</u> and <u>symbiosis</u>, the two key characteristics of mature (resilient) eco-systems.[25] Ecologically concerned people should be learning from ecology, in other words. In concrete terms this means in as many ways as possible, at all times and all places but symbiotically; meaning that there should be some interaction and even synergistic effect, something more gotten out of it than what one puts in. One group is interested in appropriate/intermediate/soft technology, another in local self-reliance, a third is concerned with the position of women. If brought together the work in the same <u>concrete</u> setting could produce a technology that would make a higher level of local self-reliance and of equality between the sexes possible. And here the government enters. The government prepares legislation: could that legislation also systematically encourage the type of economic cycles that would

generate more direct action against deterioration, out of enlightened self-interest as argued above? Much coordination and a good overview are needed to have actors at all levels and kinds work so that some synergy is produced, not being irrelevant to each other, or worse: working at cross-purposes even when not wanting to do so. On the other hand, there are many interests, values and perspectives in the field of environment, and conflict among the actors is not only inevitable and natural, but also needed. To leave it to the biggest polluters, public and private, to preside over pollution control alone is much like having narcotics dealers preside over narcotics control - it usually does not work. Hence the need for very diverse, and very symbiotic action.

The question at whose costs/benefits is a rather important one: there is no social control, and particularly no social transformation with the purpose of somebody gaining without somebody losing something. The costs should ideally be minimized and pushed upwards in society where they can better be borne, not downwards where the costs are more than high enough already. Which means that the problématique of less aggressive environmental practices becomes relatively similar to the disarmament/arms control problématique: a problem of conversion. How can one get most of the same goods and services, so that the consumers do not suffer, and at least not fewer jobs, so that the workers do not suffer if there is to be a conversion to environmentally more healthy, or at least less destructive, economic cycles? Many would argue that case A economics, or green(er) economies would solve both problems, among other reasons because it also might include somewhat more artisanal and somewhat less industrial modes of production - with lower productivity, but higher quality, including the environmental quality.(26) But experience seems to show that only countries that have already been very far into the problems of case D economics will start producing population groups arguing for reversals of the trends or at least for new structures that preserve some of the advantages of case D but with a higher level of case A systems mixed into it. Consequently it may be that such countries (specially

the Northwestern European welfare states) will have to be counted upon to make some experiments "on behalf of humanity" here - together with Third world countries that have sufficient amounts of traditional strucutres intact to build constructively on them.(27)

The question to what extent is more easily answered: till our indicators inform us that the environmental deterioration has been stopped, reversed and an acceptable and sustainable levels of humans/environment symbiosis have been attained. But there is a problem here. It is not enough to slow down, stop and reverse the process of deterioration; an acceptable stage should also be attained. Do we have good images of what that stage is, or have we been so concerned with the negative processes that we have forgotten to think of what is the goal beyond stemming the negative slide down-hill? This is important, and environmental actors of all kinds would do well to devote more time and energy to goal-formulations. This means that there should be indicators not only of negative development (pollution and depletion, for instance), but also of positive development (level of maturity of eco-systems, for instance, in the sense of neither undermaturity, nor overmaturity). At this point indicators of humans/environment symbiosis should be included, of good symbiotic relations whereby nature gives to humans and humans give back to nature so as to build a stronger nature - as in the proverbial sayings of some American Indians. Spiritual dimensions of this symbiosis should also be included.

In conclusion, and given the seriousness of our predicament today, one might also go one step further where strategy is concerned. Modelled on the excellent work done by NGOs in the field of human rights, particularly the Amnesty International, why not have an Environment International organization whose task it would be, at the nongovernmental level, to monitor environmentally relevant trends and action. The organization would publish reports on the activities of governments and corporations, the key actors in this regard - public and private. The reports would go to the roots of

the phenomena, giving information not only on the extent of the destruction, but also on why, and who-did-it, with names. There could then be international committees concerned with victims and perpetrators adopted by them, helping the former, putting pressure on the latter. Above all these committees would, with the help of the central organization, make both parties aware of alternative modes of production and consumption so that it does not only become an organization for the dissemination of moral norms and sanctions. But the world also has the right to know who the key polluters and depleters are - and the right to act accordingly.

In conclusion, some words about the los Molinos Centre. I think it is rather unique. There are very many places in the world where educational activity about environmental matters is going on, for instance at universities where environmental sciences have undergone an explosive growth during a period of only one decade. And there are also many places in the world where experiments in appropriate/intermediate/soft energy systems are taking place, not to mention places in the world where conservation of nature is carried out. But there are very few places, where all these three activities are not only found together, but enclose interaction with each other. Due to the felicitous choise of the location of the centre the focus can, very appropriately, be on semi-arid regions, even on the problem of desertification. Of course, it would also have been fortunate if some small scale factory with environmental degradation as one of its consequences also had been located here, so that the problems of what has here been referred to as case B systems could be studied in detail. This, however, may come later.

What matters is this integrated type of activity. What also matters is that it is open for everybody to come and to see, the young and the old, the educated and less educated, from nearby and from remote places. And here my own experience seems to coincide with that of the centre: the younger people are far more willing to learn and to see these important problems with an unbiassed mind since they do not have on top of their consciousness: "Yes, there are important problems, but even more important is how to maintain and even expand the trait and industrialism already attained". Evidently a new consciousness is needed, one that is able to accommodate not only environmental concerns but also the problem of how to preserve the fruits of industrialism. Thousands, hundreds of thousands, even millions of people with a consciousness of that type will produce dozens of peoples with new ideas. If that should happen no doubt a centre like los Molinos would have been one of the causal factors behind such a fortunate turn of events.