

Collapse

How Societies choose to fail or succeed

J.Diamond

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The environment is in danger. We have heard those dire warnings for almost all our lives. Until recently they were rivaled by the doomsday of a nuclear holocaust, but as that danger was perceived to have vanished (albeit naively so) after the collapse of the Soviet Union, environmental concerns took pride of place in our universe of worry, only recently having been supplanted by the spurious fear of terrorism. Yet, throughout our lives we have seen no tangible evidence of environmental degradation, just as we have not suffered the effects of overpopulation. It is then easy to chose to believe that the dangers are exaggerated, that human ingenuity and the general inertia of the world as it is, will slow and deflect any serious threat. Such beliefs are however very misleading, not to say dangerous, and are merely symptoms of the protected environment we enjoy, and which it is the business of politicians to preserve as long as possible.

Un sullied nature, i.e. innocent of human impact and the mark of civilization, appeals to most of us. In a way we would like most of nature to be like that, at least nature away from us. As it comes to our own convenience we rather have things developed and civilized. Who wants to live in a tent all night? This idea presents the environment as something of merely recreational value, and thus something to be balanced against the real material needs of people. Biodiversity is fine, but how much are we prepared to pay for it? Trees are nice to look at, but we need paper and jobs, so logging is necessary. This way of looking at the environment is wrong, and the conceived conflict of interest speciously posed. The environment is ultimately crucial, not only to our peace of mind and well-being but to life itself. This is of course a truism, but not often realized as such. Ecology is simply meta-economics. The ordinary way of looking at economic life is local and concerned only about day to day details and myopic strategies. The bottom line is sustainability, a word that unfortunately has been reduced to a mere buzz-word, easily tossed, obligating nothing. It is all about Malthus again, and the impossibility of sustained exponential growth. No trees grow to heaven, and any expanding force is sooner or later doomed to stultification. This is no more startling than that we all, as individuals, will eventually die. Sustained growth implies sustained culling achieving some kind of equilibrium, and as it involves life and death, its maintaining is not a pleasant thing. But such are the realities of ecological balance, it is not a garden of pleasure, but a valley of vailing and toil. It is not harmony, such you can only appreciate during a phase of expansion, it is drudgery, of just scraping by. Much of what we may conceive of as essential may in the face of harsh environmental realities be discarded as so much ballast. The much cherished notion of democracy for one is one whose existence may not have to be abolished completely but seriously modified. Jared Diamond does not however go into ultimately political ramifications, although he does touch on some, for him it is enough to raise the

conventional calls of warning. But such is not enough to fill up a book, he needs more to pad the pages and keep the reader interested. The problem with preaching environmental concern is that most readers will agree with you, while at the same time feel impotent to act. This will cause frustration and denial. Thus most of the bulk of the book is devoted to case histories, some of them brief, others, as with the stories of Easter Island and the Norse settlement in Greenland, quite detailed. I would say that the main virtue of the book lies in the exhaustive, yet fascinating, treatments of those marginal and peripheral societies, regardless of whether they really have anything important to teach us modern societies or not. Diamond attempts at being scientific and systematic, trying to isolate crucial factors in contributing to societies successes or failures may impress the naive reader but leave the more sophisticated cold. There are just too many individual quirks, too many variables, too few cases (as the author also candidly admits) to make any such scientific analysis meaningful. Diamond is reduced to make a hermeneutic study, making each case stand on its own, made interesting regardless of what they can say beyond themselves.

The study of the environment involves both matters subject to consensus, e.g. the disastrous effects of deforestation; and matters still of some controversy, as the issue of global warning. But even when it is clear, or should be clear, what to do, effective action is often hard to implement, just as in the case of individuals concerned about their own health and well-being, inhibited by inertia. Thus many an isolated society has come to grief though their neglect of their environment, failing to take effective action, and bringing about the necessary changes in cultural attitudes and firmly hold beliefs. On the other hand there are also examples of societies which have indeed managed to deflect environmental disaster and attaining a sustained economy. However, when this has been effected in an honest way (not just by exporting the problems, as have the Japanese and the Western Europeans) the result is not necessarily idyllic, although Diamond does not belabor this point. Maybe the most spectacular example is that of the highlanders in New Guinea, unknown by Western Civilization until their accidental discovery in the 1930's. Those people have managed to sustain agriculture for over a thousand years in a densely terraced and populated landscape. But sustainability means lack of growth, and thus a culture of modest aspiration. Life as a human is most exciting when opportunities are growing, but as noted, such expansions cannot go on forever, even if they seem to be able to do so in the short perspective. I dare say that most people, even the environmentally conscious, would find such sustainable lifestyles, which so far have been developed in human history, irksome and thus unacceptable in the long run. Instead we prefer to go into denial, profess belief both in the inertia of the planet as well as our ability to technologically impact it at will, and thus to change harmful practices into beneficial ones likely to undo undue damage.

We need food. Food production is ultimately dependent upon growth of vegetation, which in its turn depends on a steady supply of solar radiation. The latter will not go on for ever, although from the perspective of ecology and in particular human tenure on this planet¹ we can safely say that it will be inexhaustible. It is easy to compute the

¹ Some of the most egregious offenders of sound environmental practices are Fundamental Christians, professing to believe in the more or less immediate second coming. Fundamental Christianity poses more of a threat to our well-being than Fundamental Islam

total amount of solar energy that reaches the earth, and what proportion of it that can be harvested for our metabolic needs. In short to compute the ceiling of the capacity of the 'photosynthetic industry'². Vegetation can only grow on soil, and the amount of soil, although in the geological perspective renewable, is steadily decreasing. This has been known for a very long time³. And although by temporary measure as improved plants and more efficient farming, known as the Green Revolution, the general trend of decreasing agricultural returns can be stalled, there is an easily computed ceiling on how much food each square meter of surface can produce a year, no matter what how ingenious the processes. It has been computed that so far about half of the photosynthetical potential of the planet is being tapped, this means that when the full extent is being exploited, there will be no extra growth, like that of untouched forests or flower gardens, every usable piece of land would have to be used only to allow us to squeeze by. Population increases has been heralded as the major problem, although awareness of those things were much more acute forty years than now. The reason for this calming down is that the trend of population growth seems to have leveled off, and in more affluent countries like Italy and Japan, actually taking a negative turn. This has led to the comforting conclusion that rising standards of living will automatically reduce nativity and thus that the population will stabilize at some reasonable level at which everybody will be happy and people will progenerate only at a replacement level. The problem with this rosy picture is that the planet is already overly taxed, that reduced nativity will not stem the growth, due to the fact that a disproportionate number of people is in the most fertile age-group, and that an eventual stabilization will occur at such a level (maybe twice that of the present world-population, which is already more than twice of that when I was a child) that it will be unsustainable and lead to collapse. Also, and this is often ignored, the most important thing is not the actual number of people, but their impact and their requirements exacted. The affluent West, in spite of being relatively few, has the greatest environmental impact, and that the real population explosion will happen when the multitudes of India and China will generally attain western life-styles, regardless of whether their populations will grow at all. There are too many of us, and the solution is obvious. In fact Diamond speculates that the real reason for the recent mayhem in Rwanda was not ancient racial conflicts, but simply over-population resulting in an orgy, taking racial conflict as an excuse. When pressures will be too great in the world it will not be pretty. Prevalent anti-immigration sentiments of today will appear very mild when compared to the desperate measures which will be taken when everybody will feel vitally threatened, not just the politically paranoid. It is often argued that mere numbers of people is a beneficial thing, as each mind is a treasure, and the greater the resource of people, the more likely that exceptional talents will arise bringing benefits to us all. The point is, however, as Diamond points out, that with one notable exception, the most populous countries in the world are also among the most poverty-stricken on a per-capita basis. While the most affluent countries (per-capita) are, once again with the same notable exception, small societies with less than 5 million inhabitants. Now one should not take the statistics too ad notam, the one notable

² Other means of supplying food belongs so far in the realms of science-fiction

³ One of the first publicized doomsday scenarios was by the Swede Borgström, in particular pointing to the erosion of farmland, and its disastrous consequences on future food production

exception being an illustration, but it does point to one thing, namely that in large and populous countries most minds are wasted due to poverty. And also that small countries or societies tend to have a disproportionate number of scientists and artists. This does not mean that everybody can be successful if given the opportunity, only that the niche for such activities is narrow, thus not capable of accommodating the full potential. Thus if the thousand most notable scientists in history would never have been born, it is most likely that a substantial number of them would have their vacated places filled.

Thus, continuing our deductive argument, crucial to sustain fertile soils is to keep it in place, protect it from depletion, or other kinds of degradation, such as salinization. Erosion of soils is well understood. Deforestation not only keeps the soil in place, trees affect climate, encourages rainfall and protects against the sun. Also tropical forests grow on soils poor in nutrients, in fact maintaining most of the nutrients in the growth itself. When those are felled and removed, so are the nutrients, leaving a devastated landscape behind, good for nothing. And yet there is logging, rain forests are being depleted, especially in South East Asia at an alarming rate. How come such stupidity? The explanations are simple. Greed, short-term perspectives, and the universal fact that the benefits to the individual actor are tangible and focused, while the disastrous drawbacks are long-term and abstract and spread all over. The local people who could oppose them are usually so desperately poor that they cannot be bothered about starving tomorrow, when they are starving to death today; while the governments are usually too corrupt or too weak, or most often both, so as not only not opposing but in many cases even abetting. In addition to the loggers, there are also other kinds of offensive practices. Oil-companies that extract oil and cause many a spill, mining companies that dig and mess up, actively imbuing the ecological system with toxins, most of them almost impossible to eradicate. (Most of course leave the scene with no intentions of even trying to clean up). And then the industrial waste that litter our backyards, but which also do not stay content with just being eye-sores, but actually involves poisoning of groundwater and rivers, getting into our food-chains, and inexorably poisoning us to death. However, it is common to think of those industrial enterprises to do their own wicked things, without realizing that they do so not without some specific purpose, namely that of supplying the consumers with goods demanded. Thus the ultimate responsibility and thus power lies with the individual consumer. Businesses are in the business to make profits. In fact, as Diamond reminds the reader, it is actually illegal for a company not to try and optimize the dividends for its share-holders⁴. The bottom line is that there is no economical incentive for a company to act in an ecologically prudent way. The obvious solution is then to make it, and thus hope that the natural dynamism of any serious industrial enterprise, involving the preservation of its own resources, will naturally flow over into a much wider context. The ways of achieving this is partly through government regulations, which however tend to be resented and whenever possible side-stepped, and partly through consumer pressures,

⁴ Thus the sorry-looking farce of people desperately trying to get rich through no work, by investing in the stock-market, thereby encouraging the processes of degradation they so openly oppose. In fact there is an intractable conflict between an individuals desire to improve his material welfare, getting rich in short, and protecting the environment. This deeply ingrained mindset makes serious attempts at sustainability, in spite of all high-flown verbiage, impossible

that companies simply cannot afford to ignore, after all, the customer is king. Diamond, who does not want to come across as a radical environmentalists then presents some sunny stories.

One such sunny story is Chevron working in his beloved Papa New Guinea. He is taken there and surprised at the extreme care taken not to impact. First as a visitor he is thoroughly checked for contamination, he then notices that instead of swapping wide roads through the rain forests, acting as effective barriers of animal movement. In fact as much as possible is done by helicopter. As a result the animal activity is actually greater at the spot than is normal for the area. This is contrasted against another oil-drilling venture a few years earlier on the Indonesian side of New Guinea. Here wide roads had been slashed through the forest, severe oil spills, natural gas, as common by-product of drilling being wasted by letting it continuously flare. How come such differences? Diamond has it down to a difference in government. The Indonesian being corrupt and undemocratic and providing no incentives for good environmental behavior, versus the New Guinean one, in which local groups are lent a voice and liable to effect protests. It is in the interest of any business to keep down their costs, and environmental abuse tends to be costly, at least in democratic societies. Furthermore a good environmental track-record gives a competitive edge, as illustrated by Chevron getting a contract with the Norwegian Government on the basis of its ecologically conscious processes. And that is not just window-dressing, everyone from the top and down are sincere. In fact such policies also attract employees liable to sustain and develop them. So will this be something that will be widely emulated, in fact become the new trend? But, Diamond cautions, things are not so easy. Drilling for oil is actually quite a simple and clean procedure, once you have located a find, getting it out involves in principle only surgical procedures, no need to strip big swashes of land, only to drill narrow holes. Also there is almost no debris, unlike mining, when most of the ore is worthless and bulky, especially in gold-mining⁵. Furthermore the pumping of oil is clean, while in mining highly toxic chemicals are needed for the process of refining. Also oil-spills, ugly as they are, are not unmitigated. Oil is a natural organic thing and is eventually broken down. Not so with the debris of mining, that will stay there for eternity, can only be contained, not made to go away. Cleaning up a mining operation is a costly thing, in fact too costly for mining companies to handle. Thus they prefer to declare bankruptcy and transfer funds to other ventures. The oil industry is very rich, once a fund has been located, there is no longer any gamble, they know what they will get. Furthermore consumers are aware of the shortage of oil and also its necessity and hence are prepared to pay what it takes, without too much grumbling. Hence the oil-industry can easily pass on costs for clean-ups to the consumers. The consumers are after all going to pay what it takes. The mining companies on the other hand, those not going for coal (Diamond makes an important distinction here for reasons referred to above) are gambling. The profitability of a mine can never be assessed beforehand. The promising ore may run out, or turn out to be of much lower grade than expected. Furthermore consumers are not aware of the uses of various metals, although many of them are crucial to modern technology. Hence they are not prepared to pay for them, always looking for the cheapest gadgets. Hence

⁵ The same situation as for oil also essentially exist for coal-mining, where there is no bulky ore out of which to extract the coal, it is there only to be fetched up

there is only an incentive for mining companies to sell as cheaply as possible, hence their margins of profits are very narrow, putting them at desperate straits. Still there are some promising exceptions, although Diamond does not dwell on them very much.

Prospecting for oil and minerals is a matter of harvesting non-renewable resources. As we all know what we are doing is simply to dig into huge bank-accounts that have been collecting for literally millions of years. Fossilized solar energy in fact, being consumed at a rate exceeding with a huge factor the rate at which it was once formed. All this talk about cultivating bio-fuel is nonsense, there simply is not enough land-area with sufficient soil to make up the demand, as a simple back of the envelope calculation reveals. And besides fuel will be being grown where food should have been. In other words dependence on bio-fuel means burning food. This is something that Diamond does not dwell upon, and which seems almost totally ignored in the public debate. Fishing and logging on the other hand are potentially sustainable provided that they are done rationally and modestly. In stead of clear-cuttings, leading to soil-erosion and prevention of regrowth⁶, only intermittent trees should be logged allowing natural reseeding, and preventing erosion⁷. Still such practices do give upper bounds to consumption, lower than those that can be achieved today, but on the other hand far more voluminous in the long run. The same thing with fishing. At some time the riches of the oceans were considered inexhaustible. But improved techniques of fishing, along with rising demands, due to the population explosion, and fish do provide the mainstay for protein in the world, have pushed many rich sources over the brink. Cod which was once so abundant is now rapidly becoming an endangered species. The banks outside Ne Newfoundland never, in spite of a long moratorium, have not rebounded. The problem is that even if each nation knows that the procedures are suicidal, they know that if they do not take short-time advantage, somebody else will. The tragedy of the commons, or if you prefer, the prisoners dilemma. Co-operation is a good thing, but incentives are not always sufficient, there also has to be faith and trust.

The picture is bleak, yet there is room for optimism. Diamond declares himself to be one. And the reader is desperate to believe him. This is the usual psychological story. The arguments are presented, they seem irresistible, yet there is the desperate wish to have them contradicted. The man who gives the message is often thought responsible for it. Thus any hint of optimism, is also a hint that the messenger will change his mind, that he too is too alarmed by the prospects, and instead he will decide to bring about more positive facts. Maybe he can single-handedly, by an effort of will, deflect trends and save us all?

The Easter Island is one of the most isolated spots on Earth. It lies 2300 miles east of the South American continent and 1300 miles west of the closest inhabited Pitcairn islands. It is literally the end of the world, being the westernmost outpost of the Polynesian expansion. Thus, contrary to the claims of Heyerdahl, they were not populated by South American Indians floating on rafts going east, but were colonized by Polynesians, which

⁶ This differs of course from place to place, some forests are far more sensitive than others, some which actually can naturally revive.

⁷ I remember in elementary school being told that the tropical jungles were not economically viable for logging, the variety of different species preventing full-scale cut-downs. Such an idyllic setting, since then the destruction of tropical rain forests have met with no such compunctions.

should have been obvious from their language. It is a volcanic island some 60 square miles big and have been populated for many centuries. In the beginning, as testified by archaeological exploration, it was lushly forested, and at one time supporting a population maybe of some 30'000 people. When it was discovered by Europeans in the beginning of the 18th century, it was denuded, supporting a fragmented population, and dotted with strange sculptures of human like figures, with which the island is associated in most peoples minds.

So what has happened? It is not easy to find out as the island lacks a written history, yet oral history combined with archaeological investigations, tells a story of inter warfare and dwindling resources running into a vicious circle. As Diamond points out it is easy in retrospect to see what went wrong, harder to see why the islanders had not realized it and taken appropriate measures. Yet it is not always so easy to know how to stem environmental degradation, well-intended measures far too often have opposite effects. But even when you know what to do, or rather what not to do, human inertia, and the often slow decline until it is too late, makes it hard to take decisive action. The Eastern Islanders were singularly disadvantaged. The smallness of the island, its isolation, the fragility of its environment, and its far eastern distance making it a poor receptible for wind-blown volcanic ash, which otherwise provides such fertile soils the world over. But surely the island has little relevance to our own robust civilization? It is true that it was small and marginal, yet its very isolatedness makes an eerie analogy with our own position as an isolated planet. There simply will be no one to help us. And decline, gradual for most of the time, becomes rapid, not to say precipitous in the end. The ends of societies often occur shortly after their peaks. Societies are not like human beings, declining slowly during an extended period of senescence. Societies collapse.

Interesting and detailed as the story of the Easter islanders are being told, the bulk of the case-stories is devoted to the Greenland Norse. This is an example of a marginal outpost of Medieval Europe, at most countering maybe 5'000 people. The story is told well, not to say engagingly, involving over four hundred years of tenacious yet tenuous tenure, a period that so far surpasses in length the presence of the major European presence on North American soil. Unlike the case of the Easter Islanders, this story is documented, if often maddeningly laconically, in writing. In a way it has the ring of legend, the Icelandic Outlaw Erik the Red drifting ashore over a thousand years ago, the same Erik whose son Leif would discover the North American continent⁸ a fact long a matter of speculation until archaeological remains were discovered in the 1960's. In the case of Greenland, the archaeological remains are in no doubt and have been known for a long time.

So what does archeology tell us? Incidentally, this is a good way of telling a story, not the facts by themselves, but the facts as they are being interpreted in the light both of empirical discovery and underlying theoretical speculation. It gives hints as to what people ate, the kind of vegetation that grew, the kind of climate that was suffered. As in all forensic investigation, the seemingly inconsequential detail, especially when in conjunction with other inconsequential details, may go a very long way.

The Greenland Norse were descendants of a minority of people who had emigrated from Norway to Iceland, and in its turn a minority who had moved from Iceland to Green-

⁸ If you want to quibble with words, Greenland is geographically part of North America, not Europe

land, but bringing with them the same kind of expectations and cultural traditions they had inherited from their base. In Scandinavia, the climate is rather clement, and the environment is fairly resilient; on Volcanic Iceland conditions originally looked the same, but the inhabitants were forced to learn at their peril, that what you could get away with in Norway, you could not get away with in Iceland, and as a consequence, the island became rapidly deforested, in fact one of the worlds most environmentally degraded places on earth, forcing the population to hang in there by their teeth only to survive. In Greenland, the conditions were even harsher than in Iceland. Luckily (or unfortunately) the Norse arrived during a period of relative warmth, encouraging them in their belief that they could do business as usual, i.e. bringing cattle and grow hay. Soon they had to realize the impracticability, yet they persevered, cultural attitudes and habits being so ingrained. The growing season is short in Greenland, and during the time enough hay must be produced to see the bovine herd throughout the long dark winter, as well as fatten them up sufficiently. This turned out to be a losing proposition when the climate got harsher and hard winters followed upon each other with no amelioration. It transpires that only a tiny fraction of the protein the Norse Greenlanders consumed was in the form of beef, in fact such diets were reserved for the wealthy and powerful, and for them only intermittently to boot. Mutton and goat were more plentiful, not to mention seal, a meat that Diamond finds inedible, and thus probably only ingested out of desperation. One remarkable fact was that so little fish was consumed, in fact almost nothing. The author speculates that this could be due to some cultural bias, maybe accidental such, stemming from some bad experience by one of the founding fathers. Then the Greenlanders faced an additional hardship, spared the Icelanders who had taken possession of an uninhabited island. There were natives, not friendly ones either. It is assumed that the hostile relations with the Native Indians of North America had out a premature end to the first European effort of colonization, relations with the Eskimos were not much better. In fact, Diamond argues that the Norse mostly had themselves to blame, their instinctive reaction when meeting foreign people being to kill them. On the other hand the clashes known as first encounters are very fearsome things, as you never know how the other will react, or whether it is not better to attack first than to suffer the consequences of passivity. This is something the author claims he has learned from first experience during his field-works in New Guinea. The Norse were desperate, and besides they lived in a violent society. A society of intense co-operation that is true, because without it they would not have survived, but also a society that sometimes blew off its steam. The first natives the Norse encountered were probably not present day Eskimos. In fact it is nowadays being assumed that the latter are relative new-comers to the area, and that they after the arrival of the Norse displaced the original nomadic presence, a more technologically primitive and placid culture. Some authors even speculate that what brought them to the east was the rumors of the Norse and their iron. But there seems to have been very little trade between the two populations, which does not prevent many Norse artifacts to show up among Eskimo remains far to the West, as those could as well have been pillaged as traded. The Eskimos would have tended to out-number the Norse, who could ill spare fighting people.

In retrospect there are many small things that the Norse could have learned and many minor habits they could have discarded in order to substantially improve their chances of

survival. They could have learned a lot from the Eskimos, their hunting techniques, their technology, and their eating habits. They could have learned to hunt whales, as well as ravel the ice-packs during the winter harvesting the abundantly available ring-seal. They could have traded iron with their Eskimo neighbors for walrus tusks, the main export of the Greenlanders, instead of hunting them themselves. It was the income from the ivory trade that enabled the Norse to import luxury goods, following the latest Medieval fashions in dress and in worship. It was the ivory that supported the bishops and priest and paid for the stained glass windows. Just as with the Eastern Islanders a disproportionate fraction of the economic activity of the colony was dissipated on the unproductive.

The Norse were under pressure not only from nature and a hostile neighboring population, their ties with supporting civilizations were tenuous indeed. As climate got worse, it became harder to reach Greenland due to the proliferation of ice-bbergs. Also the ships that came that way were few and of modest bulk-carrying capacity. To add insult to injury, as the Crusades broke the Muslim isolation of Africa, ivory from elephant tusks became available to the Europeans, greatly deflating prices and demand for walrus tusks, and hence undercutting the main external trade. If the Norse could have enjoyed a more regular and bountiful support line, their chances would have been greatly improved. This would indeed be the case in the early 18th century, when Denmark revived its connection with the island, after a hiatus of almost three centuries. Then it was the Norse who had the upper hand, more plentifully supported, and also more liable to learn from the Natives themselves.

The Old Norse lingered on. There were originally two settlements. One western farther north, and one Eastern in the south. Of the two, the latter enjoyed the advantages and was always the most populous. The Western settlement would expire at the end of the 14th century, while the Eastern would survive a few more decades. As it was in terminal decline, with the poorer farmers starving and desperate, the latter would certainly converge upon the wealthy, just as Diamond prophesies a Planet in final decline, would see a swamping of the rich by the poor. This would bring about the final collapse of a society, tearing its social fabric apart, without which there simply were no hopes of survival.

But Iceland survived, and does so splendidly nowadays, yet one should not forget the obvious point. Rich and tiny societies today, prosper not on their own accounts, but because they are tied to far larger economies, the cream of which they may be able to skim off.

In addition to those two case stories, Diamond also discusses, but in far fewer details, the fates of the Maya, various Indian populations in the Southwest, along with a comparison between Haiti and the Dominican Republic both sharing the same island of Hispaniola. Initially Haiti was the most powerful one, at one time occupying the entire island, but while it then degenerated to the most poverty-stricken society in the Western Hemisphere, the Dominican Republic enjoyed a minor success story, in spite of decades under tyrants or near tyrants. The border between the two countries is not only visible in an Atlas, but obvious on the ground. One part of the island denuded, the other still forested.

Environmental awareness and care can be developed either by a bottom-to-top approach and a top-to-bottom, the former is the one most congenial to the liberally minded reader. It concerns rather small societies, democratically structured in spirit, where ev-

erybody realizes that they have to act for a common good. The latter is environmental decisions imposed from above, often in bitter opposition. Examples of which are the decision of the Japanese shoguns to stop logging in the 17th century, the intentional politics of Chinese authorities to impose a one-child policy, and the dictatorial decision of Balaguer, the successor of Trujillo the infamous dictator of the Dominican Republic, to stop logging. Obviously the former is to be preferred, but in real life, the finer points of democracy may have to be laid aside to divert disasters. The problem with the latter is that although efficient in implementation, the knowing of what to implement is not always clear. Most serious advocates of democracy do not emphasize its egalitarian aspects, but its potential to generate firm knowledge and thus good decisions.

September 13-16, 2006 **Ulf Persson:** *Prof.em, Chalmers U.of Tech., Göteborg Sweden* ulfp@chalmers.se