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The Environmentalism of the Poor

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Abbreviations and Acronyms

ACOFOP	Asociación de Comunidades Forestales de Petén
AECO	Asociación Ecologista Costarricense
ATCA	Alient Torts Claims Act
CGIAR	Consultative Group on International Agricultural Research
CIAT	Centro Internacional de Agricultura Tropical
CNG	compressed natural gas
CODDEFFAGOLF	Comité para la Defensa y Desarrollo de la Flora y Fauna del Golfo de Fonseca
COICA	Coordinadora de Organizaciones Indígenas de la Cuenca Amazonica
CONAMA	Comisión Nacional del Medio Ambiente de Guatemala
DBCP	dibromochloropropane
EIA	Environmental Impact Assessment
ETC	Action Group on Erosion, Technology and Concentration
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FUNDECOL	Fundación de Defensa Ecológica Ecuador
GATT	General Agreement on Tariffs and Trade
GRAIN	Genetic Resources Action International
ILO	International Labour Organization
IMF	International Monetary Fund
ISO	International Organization for Standardization
IUCN	The World Conservation Union
KRRS	Karnataka Rajya Raitha Sangha (Karnata State Farmers' Association)
LPG	liquefied petroleum gas
MOSOP	Movement for the Survival of the Ogoni People (Nigeria)
MW	megawatt
NAFTA	North American Free Trade Agreement
NCR	National Capital Region
NEERI	National Environmental Engineering Research Institute
NIMBY	"Not in my back yard!"
NO_2	nitrogen dioxide
NORAD	Norwegian Agency for Development Cooperation
PREPARE	Preventive Environmental Protection Approaches in Europe
RAFI (now ETC)	Rural Advancement Foundation International
TEDs	Turtle Excluder Devices
ULSD	ultra-low sulphur diesel
UPOV	International Union for the Protection of New Varieties of Plants
USA	United States of America
USAID	The United States Agency for International Development
VOCs	Volatile Organic Compounds
WHEACT	West Harlem Environmental Action
WFF	World Forum of Fish Harvesters and Fishworkers
WTO	World Trade Organization
WWF	World Wide Fund for Nature

Abstract

The world economy is increasing its input of energy and materials, and also its output of different sorts of waste. Optimistic views on the "dematerialization" of the economy are premature. The environmental load of the economy, driven by consumption and by population growth, is growing all the time even when the economy (measured in money terms) is based on the service sector. Hence, the many ecological distribution conflicts that arise. They are not only conflicts of interests but also conflicts on values. In this report, several such conflicts are described, and the discrepancies in the languages of valuation used by different agents are emphasized.

Poor people have defended the environment in rural areas, and also in cities. Well-known instances include the Chipko movement in the Himalaya, the struggle on the Narmada dams, Chico Mendes' fight in Amazonia, and the struggles by the Ogoni, the Ijaw and other groups in the Niger Delta against the damage from oil extraction by Shell. Until recently, the agents in such conflicts rarely saw themselves as environmentalists. Their concern is with livelihood, with *oikonomia*. They struggle for environmental justice, and thereby they contribute to the environmental sustainability of the economy. Such environmentalism of livelihood is often expressed as the defence of legally established old community property rights. Sometimes, new community rights are invoked. The intermediary NGOs have given an explicit environmental meaning to such livelihood struggles, connecting them into wider networks and proposing new policies of worldwide relevance.

The report starts with conflicts related to the issue of biopiracy in agriculture, the fact that peasant varieties of crops and peasant knowledge have been up for grabs while "improved" seeds are increasingly protected by regimes of intellectual property rights. Such conflicts are reinforcing a view of agriculture based on the ideas of agroecology, energy efficiency, food security, no subsidies to exports, and the *in situ* conservation and co-evolution of plant genetic resources, which is expressed by networks such as Via Campesina. The second section studies urban conflicts. Large cities have "ecological footprints" much larger than their own territories. This section considers the ecological conflicts caused by the growth of cities that are internal to the cities themselves (local conflicts on air, soil and water pollution, for instance), and also the conflicts that are "exported" to larger geographical scales. Where are the main actors of the environmental conflicts caused by urban growth? Are indicators of urban unsustainability indicators also of social conflicts?

The third section describes conflicts on the extraction of oil. The Texaco case in Ecuador and the Shell case in the Delta in Nigeria raise important issues of corporate accountability. Other cases (Unocal in Myanmar, Occidental Petroleum in U'Wa territory in Colombia) are considered, showing how languages of human rights, indigenous territorial rights, and sacredness, are brought into play. In the international NGO environmental movement, the relations between local and global concerns are established through single-issue networks or groups such as the International Rivers Network, the World Rainforest Movement, RAFI (now ETC), or through specific programmes and campaigns of confederations such as Friends of the Earth, or thanks to the help of global environmental organizations such as Greenpeace. OilWatch is a global network born of community struggles against oil and gas extraction, it provides south-south links among activist groups in tropical countries. Oilwatch has tried to link up local oil extraction conflicts with the global issue of climate change.

The fourth section considers the conflict between mangrove conservation and shrimp exports in different countries. Some organizations in the South have asked for northern consumers to boycott imports of farmed shrimp. This turns the tables on the (false) issue of northern "green protectionism". The mangrove forests are surrounded by shrimp growers. Shrimp production entails the loss of livelihood of people living directly from, and also selling, mangrove products. Other functions of mangroves are also lost, such as coastal defence against sea level rise,

breeding grounds for fish, carbon sinks, repositories of biodiversity, together with aesthetic values. Which languages of valuation are used by different agents in order to compare the increase in shrimp exports and the losses in livelihoods and in environmental services? Who has the power to impose a particular language of valuation?

The fifth section describes one conflict on tree plantations in Costa Rica, one of many conflicts caused by the growth of wood and paper pulp exports from the South. The slogan that sums up the resistance against such trend is "plantations are not forests". Plantation forests are not true forests. Many of the ecological and livelihood functions of the forest are lost, and poor people tend to complain accordingly. In the sixth section, gold and copper mining conflicts are described, mainly in Peru and in Papua New Guinea, both historical and contemporary. In some cases (such as Tambo Grande in Peru and Intag in Ecuador) the resistance to mining has been successful, and it has given rise to alternative development projects. Both in oil and mining conflicts, issues of corporate accountability and liability, compensation for damages under the Alien Torts Claims Act, procedures for project evaluation and decision making, are considered.

The final section summarizes the main features of the environmentalism of the poor as an environmentalism of livelihood concerned not only with economic security in the market sphere but also concerned with non-market access to environmental resources and services. This section includes a brief discussion on the role of women in ecological distribution conflicts. At the international level, the notion of the "ecological debt" from North to South (including the "carbon debt") is explained. New policy proposals in the areas of International Trade, Corporate Accountability, Climate Change, and Agriculture are submitted, based on the ideas growing out of the worldwide movement for environmental justice.

Introduction

Environmental preservation and protection have been understood as desires, which could develop only after the material necessities of life were already abundantly covered. The movement for Environmental Justice in the United States (and also in South Africa) and the wider and more diffuse worldwide movement of the environmentalism of the poor have bankrupted this view, which was prevalent until recently. The clash between economy and environment (which is studied by ecological economics) does not manifest itself only in the attacks on remaining pristine Nature but also in the increasing demands for raw materials and for sinks for waste in the large parts of the planet inhabited by humans, and in the planet as a whole. The fact that raw materials are cheap and that sinks have a zero price, is not a sign of abundance but a result of a given distribution of property rights, power and income. The environmental load of the economy, driven by consumption and by population growth, is growing all the time even when the economy (measured in money terms) is based on the service sector. Some impacts may decrease at some geographical scales, but then other impacts appear at other scales, with the resulting social conflicts. For instance, reduction of global carbon dioxide emissions may be obtained through local nuclear or hydroelectric energy projects, or by absorption of carbon dioxide through controversial local tree plantations. For instance, environmental improvements in some nations might occur because of the displacement of pollution to other nations. The case for a general "win-win" solution (better environment with economic growth) is far from proven. On the contrary, since the economy is not "dematerializing" in per capita terms, there are increasing local and global conflicts on the sharing of the burdens of pollution (including the enhanced greenhouse effect), and on the access to natural resources. Therefore, this report differs from the mainstream "eco-efficiency" approach. It emphasizes instead ecological distribution conflicts, and it studies the languages of valuation used in such conflicts.

In economic theories of production and consumption, compensation and substitution reign supreme. Not so in ecological economics, where diverse standards of value are deployed "to take Nature into account". In the ecological economics theory of consumption, no other good can substitute or compensate for the minimum amount of endosomatic energy essential for human livelihood. This does not imply a biological view of human needs, on the contrary, the human species exhibits enormous intra-specific socially caused differences in the use of exosomatic energy (to use Lotka's term). To call either the endosomatic consumption of 1,500 or 2,000 kilocalories (kcal) or the exosomatic use of 100,000 or 200,000 kcal per person/day a "socially constructed need, or want" would leave aside the ecological explanations or implications of such use of energy. And to call the daily endosomatic consumption of 1,500 or 2,000 kcal a "revealed preference" would betray the conventional economist's metaphysical viewpoint.

Production may become less intensive in terms of energy and materials, but the environmental load of the economy is driven by consumption. Rich citizens may choose to satisfy their needs or wants by new patterns of consumption that are themselves highly resource-intensive, such as the fashion for eating shrimp imported from tropical countries at the expense of mangrove destruction, or the use of gold. The approach of ecological economics, as pointed out by Gowdy in 1992, builds upon Georgescu-Roegen's "principle of irreducibility of needs". According to Max-Neef, all humans have the same needs, described as subsistence, affection, protection, understanding, participation, leisure, creation, identity, and freedom; and there is no generalized principle of substitution among them. Such needs can be satisfied by a variety of "satisfactors". One may ask why people travel so much, or why so houses are built with new materials instead of restoring old ones or recycling materials, etc. Research by Jackson and Marks (1999) on the trend to use "satisfactors" that are increasingly intensive in energy and materials to satisfy predominantly non-material needs has found that the expectations that an economy that has less industry will be less resource intensive, are premature.

In this report, only a few of these ecological distribution conflicts (i.e. conflicts on the access to natural resources or on the burdens of pollution) will be described.[1] The conclusion is reached that there is considerable activism around the world centred on environmental justice, not yet aware of its own potential strength as a global movement. It is composed of a multitude of individual groups, sometimes linked by issue-oriented international networks. The last section addresses some international new policies that would be consistent with the potential strength of this environmentalism of the poor.

Biopiracy, Farmers' Rights, and New Peasant Movements

In the "centres of agricultural diversity" (for instance, the Andes for the potato, Meso-America for maize), named after the Russian geneticist Vavilov, there has been over the last thousands of years a large amount of experimentation by peasants (women and men) in order to produce the hundreds and thousand of varieties adapted to the different conditions. These varieties have been shared freely. In India, as Kothari puts it (1998:51), a single species of rice (*Oryza sativa*) collected from the wild some time in the distant past, has diversified into approximately 50,000 varieties as a result of a combination of evolutionary/habitat influences and the innovative skills of farmers. This contribution to genetic diversity is a fact that the modern seed industry conveniently sidesteps, and that the consumers ignore. Agricultural biopiracy is a topic that the Food and Agriculture Organization of the United Nations (FAO) has been discussing for twenty years under the name of Farmers' Rights. Some governments from developing countries say that "if a company takes a seed from a farmer field, adds a gene and patents the resulting seed for sale at a profit [or otherwise "improves" the seed by traditional methods of crossing, and then protects it under the UPOV rules], there is no reason the initial seed should be free. They also say patents ignore the contributions by indigenous peoples, who often are the true discoverers of useful plants and animals, or of farmers who improve plants over the generations. The negotiation run by the Food and Agriculture Organization [on Farmers' Rights] is weighing whether to compensate traditional farmers for work on improving crops and maintaining different varieties. Malaysia has proposed an international fund of $3 billion but the United States opposes it" (Pollack 1999). Notice that US$3 billion, not as a fund but as a yearly contribution, would represent not more than approximately 2 dollars per member of the still existing peasant families in the world today, too little as an incentive to continue with their task of in situ conservation and coevolution of seeds. Twenty dollars could start to make a difference, if they would reach the grass roots. But, then, who wants the Third World farmers to continue growing and locally freely sharing or selling their own low-yielding, low-input seeds? From the point of view of international capitalism, would it not be more conducive to economic growth to replace their seeds by commercially produced seeds? A new commodity, the seed, would definitively leave the sphere of oikonomia to enter into chrematistics, moreover yields would be larger, and more commercial inputs would be required. Should not traditional seeds be really be forbidden, as they are forbidden in developed countries on grounds of lack of sanitary or yield guarantees? (see Kloppenburg 1988, for a pioneering study).

Instances of Biopiracy

A patent which raised many eyebrows was that for a variety of *ayahuasca* (United States Patent 5751, granted in 1986). The original variety was given in Ecuador to Loren Miller, not a big deal since ayahuasca (*Banisteriopsis caapi*) is commonly used with different names as hallucinogic all over Amazonia. Some of its uses require the intervention of shamans, and have religious overtones. Miller, who developed a stable variety, set up a small company, International Plant Medicine in the United States, and took a patent, trying without success to interest big companies in the properties of the plant. Years later, in the late 1990s, as things happen in the non-governmental organization (NGO) world, the Rural Advancement

[1] This paper contains information and ideas set out in more detail in Martinez-Alier (2002).

Foundation International (RAFI) (now the Action Group on Erosion, Technology and Concentration—ETC) became aware of this patent and made public its existence, causing an uproar in Amazonian countries. Using language which emphasized their very strong feelings on the matter, COICA (a confederation of indigenous organizations of Amazonia) declared that patenting *ayahuasca* was like patenting the Holy Host, and that Miller was an enemy of indigenous peoples whose safety could not be guaranteed in Amazonian territories. Some of COICA's Northern donors complained of such language, and COICA stated they were quite ready to do without their money. Amazonian sacred symbols such as ayahuasca could not be assessed, let alone compensated in money terms. Other recent examples of patents in the United States relate to Asian materials widely known for their health applications: turmeric from India, the bitter melon from China (Pollack 1999). In India, spectacular cases of attempted foreign patents in the last few years have been some properties of products obtained from the very well known neem tree (*azadirachta indica*), and some varieties of chickpeas and basmati rice (by Rice Tec). Relevant for Latin America, some hybrid varieties of Bolivian quinua by University of Colorado scientists (Garí 2000). With one case after the other in Amazonian and Andean countries, with similar events in Meso-America, Africa and in Asia, a widespread awareness has grown of the value of genetic resources, both medicinal and agricultural, and of the new modalities of biopiracy. Hence the reaction from NGO, from communities, and even from the concerned states. RAFI-ETC has published some estimates of the economic values expropriated by biopiracy. There are technical questions of how to calculate this item in the Ecological Debt from North to South but beyond economics, what is new is a sense of moral outrage, mixed however with a feeling of *déjà vu*.

"Bioprospecting" contracts are based on the expectation that bringing biodiversity to the market would be a powerful incentive for conservation, and at the same time that buying access to genetic resources is an economically attractive proposition for commercial firms. Both points remain to be proven. The National Institute of Biodiversity (InBio)-Merck agreement in Costa Rica in 1991, so bandied about, must not be interpreted perhaps as a real business transaction. From Merck's points of view, it was a public relations expenditure, and from InBio's point of view it was as a useful addition to their finances, which mostly came and still come from foundations and foreign governments' donations (Gámez 1999) and not from placing its biodiversity inventories in the bioprospecting market. Inbio's argument would be that remunerated bioprospecting is better in any case than straight biopiracy. The counter-argument is that if the rationale for conservation is market remuneration, and this (at least for the time being) is not forthcoming or very small, then enemies of conservation will feel strengthened. Costa Rica, of its own accord, decided (outside market considerations) to preserve about one-fifth of its territory as forests, after a long history of deforestation because of banana plantations, and cattle-raising, to which today there are today added threats from mining and also from population growth. Then, the biodiversity in the preserved forests was mostly ceded to InBio, a parastatal organization. InBio has made some money from putting biodiversity in the market in its contracts with Merck and other companies. This money is like a tip, nothing more. The decision to keep the forests untouched was an extra-market decision, helped by other market and extra-market considerations such as ecotourism, water retention, and carbon absorption. It is a good decision, but it is not a decision produced by the market. I might be still wrong if Merck or any other of the few companies which have bioprospecting contracts with InBio obtains a rich patent based on InBio's materials.

New Peasant and Farmer Movements

While in Mexico the alarm at the presence of transgenic maize in the fields has sparked off in 2002 a movement called *En Defensa del Maiz*, such new eco-peasant movements have existed for some time already in other countries. There are deliberate attempts in India by groups and individual farmers to revive agricultural diversity. In the Hemval Ghati of the Garhwal Himalaya, some farmers under the banner of the Beej Bachao Andolan (Save the Seed Movement) have been travelling in the region collecting seeds of a large diversity of crops.

Many farmers grow high-input high-yield rice varieties for the market but also other varieties for their own families. The movement emphasizes the economic costs of inputs, and the chemical and ecological implications of using chemicals, and tries to spread some rice varieties, like thapachini, which performed well and produced more fodder. An important issue in India is to promote not only the survival of many varieties of the main crops (wheat and rice) but also to keep alive other food crops which have been not subject to "Green Revolution" seed substitution—like bajra, ramdana and jowar, and also pulses in general. In the south of the country, in Karnataka, the somewhat grandly named "seed satyagraha" of the Karnataka Rajya Raitha Sangha (KRRS), became well known in the early 1990s.[2] On 30 November 1999, the first day of the World Trade Organization (WTO) conference in Seattle, several thousand farmers gathered in Bangalore at the Mahatma Gandhi statue in the park, they issued a "Quit India" notice to Monsanto, and they warned the prestigious Indian Institute of Science not to collaborate with Monsanto in research. The company was urged to leave the country or face non-violent direct action against its activities and installations. It was reported that in some districts Monsanto seeds of sorghum had been destroyed. Agribusiness had already been warned with the destruction of Cargill installations in one district back in 1993. The KRRS leaders have also been active against the introduction of transgenic seeds (such as Bt [Bacillus thuringiensis] cotton).

Also in India, Navdanya is a large network of farmers, environmentalists, scientists, and concerned individuals which is working in different parts of the country to collect and store crop varieties, evaluate and select those with good performance, and encourage their re-use in the fields (Kothari 1998:60–61), certainly a more participatory strategy than that of *ex-situ* cold storage. What other name but "ecological neo-Narodnism" to give to such initiatives? Who would have thought twenty years ago that praise for organic agriculture would be expressed not by professional ethnoecologists or agroecologists or by Northern neo-rural environmentalists but by real agriculturalists from India in international trade meetings? This is not to be seen as a purely defensive attitude towards modernity and development; it is not idiosincratic homespun oriental wisdom combating western agricultural technology. On the contrary it must be interpreted as part of an international worldwide trend, with solid foundations in agroecology, towards an alternative modernity.

Changing continent, what is the strategy that the Quechua and Aymara peasantry could put into play, in order to survive and prosper against the forces of modernization, development and rural depopulation? In the land reforms of the last fifty years, they got the land, fighting against the modernization of the haciendas. The hacendados wanted to get rid of them, they stayed put, and increased their holdings. There are more established communities and more communal (pasture) land in the Andes now that thirty or forty years ago. This bothers the neoliberals. The peasantry has not yet decreased in numbers, despite migration, but now the birth rate is coming down. Will Quechua and Aymara communities survive as such? Their resistance would be helped by improvement in the terms of trade for their production, if imports of agricultural products from the United States and the European Union would decrease, if they also could get subsidies (in the form of payments for Farmer's Rights, for instance, and subsidies for use of solar energy), and if they could exercise organized political pressure for this purpose. We see explicitly for the first time in the Andes an agroecological nationalist pride which provides a foundation for an alternative development or, as Arturo Escobar would put it, for an alternative *to* development. This is what Pratec in Peru, founded by dissident agronomist Eduardo Grillo, tried to do, building upon the work by agronomists from remote provinces such as Oscar Blanco who long defended cultivated species such as quinua and many tubers (the "lost crops of the Incas") against the onslaught of imported subsidized wheat, and also defending in-situ co-evolution of varieties of potatoes and all the other species. Pratec is romantic and extremist, but the subject it puts on the table is realistic and down-to-earth. It is not their fault that it not considered worth of

[2] Cf. the letter from M.D. Nanjundaswamy, in *Economic and Political Weekly* (1993), and the emailed newsletter of the KRRS.

attention in multilateral banks or even in universities (Apffel and PRATEC 1998). For, under the discussion on agricultural and livestock in-situ biodiversity conservation, lurks a large question, which is still outside the political and economic agenda. Has the march of agriculture in the last 150 years in western countries been wrong? What is the agronomic advice that should be given not only in Peru or Mexico, but even more in India, in China, should they preserve their peasantries or should they get rid of their peasantries in the process of modernization, development and urbanization? How to stop not only agricultural genetic erosion but also the loss of animal races? FAO often quotes a figure of 75 per cent of agricultural varieties already lost in-situ (although there is not enough research to substantiate a precise quantitative claim), and it has also asserted that 30 per cent of all races of domestic work or edible animals have disappeared or are about to disappear (*Financial Times*, 15 September 1998).

The usual explanation for the disappearance of the agricultural active population in the process of economic development is that, as productivity increases in agriculture, production cannot increase pari passu because of a very low-income elasticity of demand for agricultural produce as a whole. Therefore, the active agricultural population decreases not only in relative but also in absolute terms, and indeed this has been the path of development—in Britain already before the First World War, in Spain since the 1960s only, in India not yet. Now, however, agricultural productivity is not well calculated, nothing is deducted from the value of production on account of chemical pollution and genetic erosion, and the new inputs are valued too cheaply because fossil energy is too cheap, and because unsustainable use is made of soils and some fertilizers (such as phosphorous). What the ecologically correct prices should be, nobody knows. The important point is that the ecological critique of the economics of agriculture opens up a large space for neo-Narodnik argument. Issues of global environmentalism such as biodiversity conservation, threats from pesticides, energy saving, are transformed into local arguments for improvements in the conditions of life and for cultural survival of peasants, who are learning to see themselves no longer as an occupation doomed to extinction. Such arguments have become widespread in international networks such as the Via Campesina (International Farmers Movement), which has instituted an international Peasants' Day, 17 April (which is the anniversary of a massacre in 1996 in the state of Parà, Brazil, of 19 members of the Landless Movement). This is not a phenomenon of post-modernity, in which some live (or try to make a living) by buying Monsanto shares, others eagerly eat hogs grown with transgenic soybeans, others are macrobiotic, and still other do organic farming. It is rather a new route of modernity, based on scientific discussion with, and respect for, indigenous knowledge, improved ecological-economic accounting, awareness of uncertainties, ignorance and complexity, and, nevertheless, trust in the power of reason.

Subsidized exports from the United States (US) and the European Union (EU) undermine peasant agriculture in many countries. Mexican peasant agriculture is under threat because of imports from the United States under the North American Free Trade Agreement (NAFTA), particularly of maize. Eco-*Zapatism* was overdue in Mexico. It has now become general knowledge in Mexico that indigenous cultures and biodiversity go together, and that biodiversity is valuable. The Chiapas rebellion came into the open precisely against the NAFTA treaty on the day it became operative. It helped to make the peasantry a political subject. Mexicans peasants never thought of patenting or instituting other types of intellectual property rights on the varieties of maize that have been collected in public or private ex-situ repositories, and then used by the commercial seed industry either domestic or from the United States or other countries. Mexican peasants never thought either of patenting varieties of beans (*Phaseolus vulgaris*), but one U.S. based company was suing at the end of 1999 Mexican bean exporters, charging that the Mexican beans they are selling in the United States infringe a patent taken by Larry Proctor, the owner of a small seed company Pod-Ners. The patent (n. 5894079) is on a yellow bean variety. Proctor called this variety Enola, and it acknowledges that it was developed from Azufrado and Moyocaba beans from Sonora, yellow landraces (or rather "folkseeds", as Pat Mooney likes to call landraces since they do not grow by themselves on the land). Proctor selected yellow beans of a particular hue and planted again and again, several

crops since 1994 when the original stock was imported from Sonora, and it obtained a uniform and stable population of beans of a particular shade of yellow. No genetic engineering was involved. RAFI called this "a textbook case of biopiracy", and stated that at Centro Internacional de Agricultura Tropical (CIAT) in Cali (one of the CGIAR research centres and ex-situ deposits) there are scores of yellow Mexican bean varieties which are "in trust" germplasm under the 1994 agreement between CGIAR and FAO, therefore not patentable. Why, then, the Pod-Ners variety can be patented when it is probably genetically identical to some of these other varieties? Mexican agricultural authorities said that they would fight the patent, though this will be expensive.

How to combat biopiracy? Should there be a rush in Southern countries to implement intellectual property rights in crop varieties and in medicinal knowledge? In India, Anil Gupta has long confronted this question with a pioneering large-scale ground level effort to document in the form of local community registers, the local community knowledge regarding old and innovative resource uses. The idea is to assist communities to document what so far has been part of oral tradition. The objectives are manifold: the exchange of ideas between communities, the revitalization of local knowledge system and the building up of local pride in such systems, and the protection against intellectual "piracy" by outsiders (Kothari 1998:105). The protection arises because prior registration and publication which would stop patenting. As Anil Gupta has said repeatedly, if for instance somebody is to patent some properties of neem, why not ourselves, Indian farmers and scientists? The main thrust of his work, however, has been to enhance local pride in the existing processes of conservation and innovation.

Conclusion

There is then a growing alarm in Southern countries which are centres of agricultural biodiversity, or close neighbours to them, because of the disappearance of traditional farming. This new awareness, which goes totally against the grain of development economics, is helped by the social and national asymmetry between the seed companies (often multinationals) and the local peasants and farmers. The languages of social exploitation and national security have been added to the agronomic language of defence of domesticated biodiversity against genetic erosion. Conservation of "wild" biodiversity in "national parks" is seen often as a Northern idea imposed on the South (as to some extent is really the case, witness the role of the World Wide Fund For Nature [WWF], the World Conservation Union [IUCN], Nature Conservancy), and the new route to "wild" biodiversity conservation through bio protecting contracts provokes complaints about disguised biopiracy. Then, on the agricultural front, conservation of in-situ agricultural biodiversity is not being pushed at all by these large Northern organizations, it is pushed instead to some extent by the FAO debate on Farmers' Rights, and mainly by specific NGOs such as RAFI-ETC and Genetic Resources Action International (GRAIN), also by Southern scientists, and by southern groups who develop pro-peasant ideologies. Countries are seen as increasing their national and food insecurity, as they increase their dependence on outside seeds, technologies and inputs. This feeling of insecurity will increase with biotechnological techniques of genetic engineering.

Urban Environmental Conflicts

Large cities are environmentally unsustainable. They process large amounts of energy and materials, and they excrete different sorts of waste products. Their "ecological footprints" are much larger than their own territories. However, this section asks optimistic questions. Are not cities the main seats of eco-efficient technological innovations? Are there co-evolutionary trends in urban development leading towards environmental sustainability? Because of the quick rate of world urbanization with heavy energy and materials requirements, compounded by increasing urban sprawl, pessimistic answers are given to these questions. Therefore, this

section goes on to consider the ecological distribution conflicts caused by the growth of cities that are internal to the cities themselves (conflicts on air or soil pollution such as those highlighted by the Environmental Justice movement in the United States, for instance), and also the conflicts, which are "exported" to larger geographical scales. Where are the main actors of the environmental conflicts caused by urban growth? Are the outcomes of such conflicts the key to an improvement in urban unsustainability?

The ecological view of cities, today well known, has roots in the chemistry and physics of the 19th century, as when Liebig lamented the loss of nutrients in cities which did not return to the soil. Before the Athens Charter and Le Corbusier's preponderance, the ecological view was influential in urban planning, most significantly in Patrick Geddes's work, and later in the work of Lewis Mumford in the United States and Radhakamal Mukerjee, a self-described social ecologist, in India. Geddes was a biologist and urban planner. Writing to Mumford from Calcutta on 31 August 1918, he had succinctly made one main point of ecological city planning. In his City Report for Indore he wanted to break with the conventional drainage of "all to the Sewer" substituted by "all to the Soil". Shiv Visvanathan has powerfully asserted that today's Gandhi would not be so uniquely concerned with the virtues of the rural village. "Gandhi would . . . make the scavenger the paradigmatic figure of modern urban India . . . . Gandhi argued that waste has not been fully thought through by city science . . . sewage rather than becoming a source of pollution would become a source of life and work. The classic example of city sewage use was Calcutta. This much maligned city uses its sewage to grow the finest vegetables. By focusing on waste, the city sciences of today can recover an agricultural view of the world" (Visvanathan 1997: 234–235).

One of the favourite indicators of urban unsustainability is W. Rees' and M. Wackernagel's "ecological footprint"—a notion that one could find already in H.T. Odum's works of the 1960s and 1970s. This is not merely a neutral index of the ecological (un)sustainability of a given territory, it also has a clear distributional content. Is there an unavoidable conflict between cities and the environment? Or, on the contrary, are cities the seat of the institutions and the origins of the technologies which will drive the economy towards sustainability? Who are the social agents active in cities in favour or against sustainability? Are indicators of urban (un)sustainability to be seen also as indicators of (potential or actual) social conflicts? Is there a new debate on "desurbanization", remembering that in Moscow around 1930, which was stopped by Stalinism with the help of Le Corbusier (read his mocking letter to Moses Ginzburg, of 1930)? Or, on the contrary, is there a new praise for the cities? Indeed, the role of the city as the origin of technological and cultural innovations is the guiding line of Peter Hall's *Cities in Civilization* (1998). Armed with beliefs in the blissful kingdom of economic growth at compound interest as announced by Keynes, and in Kondratieff's long cycles of investment, Peter Hall produced a fascinating, dramatic book which culminates with the triumph of the "new economy". As with the initial cluster of car manufacturing in Detroit, so with personal computers, a local constellation of technical ability and "garage" entrepreneurship develops into a new leading sector of the economy. Peter Hall pays lip-service to the notion of ecological sustainability, mentioning "sustainable urbanism" (p. 965) and even "sustainable urban development" (p. 620) whatever that may mean, but the main thrust of his book goes against Lewis Mumford's ecological pessimistic view of large scale urbanization.

There are two main questions to be discussed here: (i) the increased urbanization of the world population; and (ii) the form adopted by cities, whether they are compact cities or whether, on the contrary, they sprawl. There was a close relation between the "garden city" movement born from Ebezener Howard's proposals of 1900 for green belts to stop the growth of conurbations, and Mumford's regional planning of the 1920s against suburban overspill (urban "sprawl" was invented in 1956 by W.F. Whyte). Howard's "garden city" idea, or rather his terminology, was often used for totally opposite objectives, i.e. to justify private middle class suburbs. Mumford wrote to Geddes on 9 July 1926, trying to find new words for Howard's approach: "We are attempting to discard the word, Garden City. And Regional City is our present substitute, which

must carry with it the notion of a balanced relation with the region, as well as a complete environment within the city for work, study, play, and domesticity". Thirty years later, Mumford was still making a spirited defence of Howard's proposal to build relatively self-contained, balanced communities, supported by their local industry, with a permanent population of limited number and density, on public land surrounded by a swath of open country dedicated to agriculture, recreation and rural occupation. "Howard's proposal recognized the biological and social grounds, along with the psychological pressures, that underlay the current movement to suburbia . . . The new kind of city he called the "garden city", no so much because of its internal open spaces, which would approach a sound suburban standard, but more because it was set in a permanent rural environment . . . making the surrounding agricultural area an integral part of the city's form. *His invention of a . . . green belt, immune to urban building, was a public device for limiting lateral growth and maintaining the urban-rural balance*" (Mumford 1956:395–396, emphasis added). The Garden City approach was based on an ecological understanding of the city within its region.

The ecological conflict over green belts is also an economic conflict over the appropriation of the potential differential rent from the preserved green spaces as they are consumed by urban sprawl and soil sealing. When the economic conflict is solved in favour of realizing the potential rents by soil sealing and building over the green belt spaces, then unaccounted negative environmental effects arise. In Europe "over the past 20 years the extent of built-up area . . . has increased by some 20% and far exceeds the rate of population growth over the same period (6%)" (European Environment Agency 2002: 109).

Although Mumford was indeed aware of Patrick Geddes' ecological view of the city as a centre for the gathering and dissipation of energy (and for the intensification of the cycles of materials), nevertheless Mumford did not develop Geddes' vision into an empirical energy analysis of cities (Bettini 1998). This type of analysis had to wait until the 1970s when the study of "urban metabolism" (by authors such as Boyden (1981) in his research on Hong Kong) became an established field of study. While the endosomatic energy consumption of a citizen is about 2,500 kcal per day, that is, a little over 10 megajoules per day and 3.65 gigajoules per year, the expenditure of energy of one person during one year only in individual transport in a rich urban region characterized by urban sprawl like Los Angeles is about 40 gigajoules. In comparison, in compact cities, with metro or bus, one person will spend 4 gigajoules per year in urban transport. And, should the person travel by foot or bicycle, then we have already included her energy expenditure in the endosomatic account.

When one looks at reality, one sees that the innovative cities, for instance Seattle, are also examples of car-based urban sprawl. And many other cities are not innovative. Large-scale urbanization is still before us. The largest cities are not yet in India and China, they are Tokyo, New York, Sao Paulo, Mexico. If the hierarchy of cities in China and India does not change, if their active agricultural population goes down to 20 per cent, conurbations of 40 or 60 million inhabitants will develop. As humanity becomes more and more urban, are we moving towards economies which use less energy and materials per capita? Certainly not.

Scale and Footprints

As conurbations grow by urban sprawl into metropolitan regions, and as the throughput of energy and materials increases over the region, environmental indicators and indexes may show different trends at the municipal and regional levels. This is a familiar phenomenon in Europe, where core areas improve their environmental quality (with some exceptions still, such as Palermo) while exporting pollution and importing environmentally costly materials and energy. Such phenomena are paralleled at world level where metropolitan countries are able to displace environmental loads to the periphery. There are many other cities in the world (Lima, for instance) where trends have been negative at all scales. But take the case of Barcelona. This is a nice city which in the strict administrative sense occupies only 90 square kilometres with a

population of 1.5 million. The city is booming in economic and cultural values, the population has decreased in the strict municipal territory in the last ten years allowing a process of renewal and (partial) gentrification in the old city centre. Water consumption has also decreased, green spaces have increased (the new beaches in the Olympic village, new parks), and visits by tourists have increased. Are we to say that we are more sustainable, better adapted to increasing scarcities of energy and materials? Who has the power to privilege one analytical point of view (the economic, the social, the environmental) at a chosen time-space scale? The conurbation is a half circle with a radius of about 30 kilometres with a population of about 4 million people. This constitutes a single daily labour market. The improved private and public transport network facilitates travel. But, in fact, the largest Olympic investment in 1992 was the building of a circular motorway, which facilitates getting in and out of the city by car.

Barcelona, therefore, constitutes a familiar pattern of urban sprawl. While some environmental indicators have improved in the city itself, there are increases in carbon dioxide produced in the conurbation. Soil sealing has increased; the agricultural green belt has disappeared. Water consumption is increasing in the conurbation, and Barcelona is contemplating importing water from the Ebro or the Rhone. The conurbation lives from oil and gas imported from Algeria and elsewhere, from hydroelectricity from the Pyrenees, and from nuclear power imported from three large stations in southern Catalonia, 160 kilometres to the southwest of Barcelona.

In ecological economics, co-evolution, as used by Richard Norgaard, denotes a process in which human culture evolves, agriculture is invented, new varieties of plants are selected and new agrarian systems develop, all in a context of sustainability and (perhaps) increased complexity. There are no similar examples of technological change in cities on which one could construct a theory of *sustainable* endogenous technical change. There is no spontaneous internal trend towards use of sustainable forms of energy, for instance, or towards less production of material residues, because the internal complaints against "externalities" in cities are often displaced elsewhere by changes in scale. London smog no longer exists in London and fishes swim again in the Thames but at other scales London's environmental indicators have not improved. The question to be asked is, *on which scale(s) should (un)sustainability be assessed?*

Urban "Environmental Justice"

There is no spontaneous evolutionary trend to ecological sustainability linked to the growth of cities, rather the reverse. Nevertheless, social movements against some of the "externalities" produced in cities could help in the movement towards sustainability. The next section will offer some examples from India, but first some remarks will be made on the Environmental Justice movement in the United States because in this country there are well-known popular movements under the heading of "environmental justice" concerned with urban pollution issues (though not exclusively, since they are also active in rural contexts). In 1987, the United Church of Christ Commission for Racial Justice published a study of the racial and socioeconomic characteristics of communities with hazardous waste sites. Subsequent studies were said to confirm that African Americans, American Indians, Asian Americans, and Latinos were more likely than other groups to find themselves near hazardous waste facilities. Other studies found that the average fine for violations of environmental norms in low-income or people of colour communities was significantly lower than fines imposed for violations in largely white neighbourhoods. Under the banner of fighting "environmental racism", low-income groups, members of the working class, and people of colour constituted a movement for environmental justice, which connected environmental issues with racial and gender inequality, and with poverty (Bullard 1993).

There are many cases of local environmental activism in the United States by "citizen-workers groups" (Gould et al. 1996) outside the organized Environmental Justice movement, some with one-hundred years' roots in the many struggles for health and safety in mines and factories, perhaps also in complaints against pesticides in Southern cotton fields, and certainly in the

struggle against toxic waste at Love Canal in upstate New York led by Lois Gibbs (Gibbs 1981, 1995) who also later led a nation-wide "toxics-struggles" movement showing that poor communities would not tolerate dumping grounds any longer being (Gottlieb 1993; Hofrichter 1993). In the "official" Environmental Justice movement are included celebrated episodes of collective action against incinerators (because of the uncertain risk of dioxins), particularly in Los Angeles, led by women. Cerrell Associates had made known a study in 1984 in California on the political difficulties facing the siting of waste-to-energy conversion plants (such as incinerators of urban domestic waste), recommending areas of low environmental awareness and low capacity for mobilizing social resources in opposition. There were surprises when opposition arose in unexpected areas, such as the Concerned Citizens of South Central Los Angeles in 1985. Also in the 1980s, other environmental conflicts gave rise to groups such as People for Community Recovery in South Chicago (Altgeld Gardens), led by Hazel Johnson, and the West Harlem Environmental Action (WHEACT) in New York, led by Vernice Miller. The movement for Environmental Justice was successful in getting President Clinton to enact an Executive Order (11 February 1994) by which all federal agencies must identify and address disproportionately high and adverse health or environmental effects of their policies and activities. In many Third World cities we find conflicts on the distribution of water (Swyngedouw 1997), Cochabamba in Bolivia being one of the most famous. In general, many urban grassroots movements (Castells 1983) can be interpreted as responses to ecological distribution conflicts, that is, conflicts on the inequalities in the access to natural resources and in the burdens of pollution. Today, the banner of "Environmental Justice" (against so-called environmental racism) is also used in South Africa (McDonald 2001) both in urban and rural situations.

Pollution Struggles in India and Brimblecombe's Hypothesis

The environmental chemist and historian Peter Brimblecombe (Brimblecombe and Pfister 1990) has argued that sulphur dioxide emissions usually provoke social reactions because they come from *visible* single-point sources (coal power stations, smelters), while other forms of air pollution (nitrogen dioxide [NO_2] and volatile organic compounds [VOCs] from cars, precursors of tropospheric ozone) are more dispersed and they are more peacefully accepted. Brimblecombe's hypothesis is helpful in explaining movements against sulphur dioxide. Does the hypothesis also explain why there is not, anywhere, a popular spontaneous environmentalism against cars, even in polluted cities of the South (including China) where most people have no cars? Is this a missed opportunity for the environmentalism for the poor? Is this situation changing, with the perception of an increasing incidence of infantile asthma in cities, and with the (successful) movements against leaded gasoline? Have we looked close enough?

Why is the reaction against "London smog" usually stronger than against "Los Angeles smog"? One answer is that London smog, largely sulphur dioxide, usually arises from easily identifiable sources. Hence for instance the "chimney wars" in nineteenth century Germany. Los Angeles smog is largely produced by cars running all over the conurbation.

In India, the colonial authorities enacted regulations in Bombay and in Calcutta in the 1860s curbing air pollution. The problem was worse in Calcutta than in Bombay because of lack of wind during a good part of the year. Starting with the ready availability of Raniganj coal, Calcutta had witnessed a sudden change in the character of its atmosphere. Anderson (1996) applies Brimblecombe's hypothesis to Calcutta. It was not so much that the aggregate levels of haze increased (that haze being due to the widespread burning of wood and dung in poor households across the city) but rather that there were now easily identified sources of black smoke from the industrial chimneys of the jute mills and also from the ocean steamships. Opposition to these visible sources of pollution explains the new legislation, promoted by the colonial power with general support. Nevertheless, such general complaint against industrial air pollution cannot be taken for granted. An environmental improvement, if gained at the cost of a

worsening economic distribution, will be opposed by poor people, as in Visvanathan's account (1999) of pollution struggles in Delhi.

Workers were confronted with industrial closures or the displacement of industries outside the limits of Delhi because of Supreme Courts decisions, especially under the "green" judge Kuldip Singh, starting in 1985 with the petition filed by the advocate M.C. Mehta against tanneries which polluted the river. Foundries, fertilizer factories, steel mills, paper and pulp factories, even textile mills were hit by the active role of the Court whose decisions were focussed on visible industrial installations rather than on diffuse sources of pollution. Compensation to displaced labourers in Delhi was ordered but many thousands of workers were not in the rolls, being casual subcontracted labour.

A junior textile employee at Swatantra Bharat Mills complained against the displacement of this industry outside the National Capital Region (NCR}:

> "In this world the divide is between the rich and the poor and it is the poor who have to die for they are cheaper! We will have to shift to Tonk (the new site) for the law is of the rich man . . . The management is powerful, the government is of the rich. This is an attempt to throw the poor out of the city. *Pollution in the city is vehicular, not industrial.* Does the government think how a poor man will feed his wife and child? . . . These wise intellectual men of law Kuldip Singh and Saghir Ahmad have brought people to ruin . . . Whatever Kuldip Singh did, he did not think of the poorer sections of society. What was the need of leaving the NCR and going to Tonk, where there is nothing at the moment. With one stroke of the pen he wrote away lives of thousands of people in difficult times" (Visvanathan 1999:17).

To this textile employee and other workers like him in Delhi, contrary to Brimblecombe's hypothesis, diffuse pollution due to traffic became now more *visible* than point-source pollution! The debate on asthma became more relevant politically than sulphur dioxide or than water pollution!

Figures from a combined pollution index show that in Delhi over seventy five per cent of the air pollution is vehicular (from private and public transport, with over 3 million vehicles included two-wheelers), twelve per cent domestic, ten per cent industrial (of which two thermal power stations account for a major share) (Visvanathan 1999:5). Official actions were directed to visible industrial installations. The new social visibility of vehicular air pollution in Delhi, fuelled by the controversy on industrial dislocation and by a strong campaign from the Centre for Science and Environment, led to a decision by the Supreme Court on 28 July 1998, that all city buses and all auto rickshaws should convert to compressed natural gas (CNG) fuel by 31 March 2001. When the fateful date arrived, there was pandemonium in Delhi since most buses had not yet converted, and did not circulate for one day or two. Debate still continues on the cost-efficiency of converting to CNG instead of ultra-low sulphur diesel (ULSD) or liquefied petroleum gas (LPG). It now seems that vehicular pollution from buses and auto rickshaws will start to decline in Delhi. Nevertheless, the traffic and pollution from private cars and motorbikes is on the increase (see *India Today* 2001:52–57).

Conclusion

Urbanization increases around the world because of productivity increase in agriculture, coupled with low income-elasticity of demand for agricultural produce as a whole. Therefore agriculture expulses active population. The ecological critique is that increases in agricultural productivity (which today depend on increasing inputs into agriculture and on the externalization of environmental costs) are not well measured because they do not take into account the decreased energy-efficiency of modern agriculture, the genetic erosion that takes place, and the effluents produced. So, both cities and countryside nowadays tend to push environmental problems to higher spatial scales and longer temporal scales. But, while it would technically be possible to return to a pattern of "organic" agriculture, large prosperous cities are irremediably based on

fossil fuels and on the externalization of environmental costs. Do cities produce anything of commensurable or comparable value in return for the energy and materials they import, and for the residues they excrete? Which are the internal environmental conflicts in cities, and are they sometimes successfully pushed outwards to larger geographical scales? These have been the points of departure for the present chapter. It would seem that the more prosperous a city, the more successful in solving internal environmental conflicts, and the more successful also in displacing environmental loads to larger geographical scales.

Cities are not environmentally sustainable, by definition, their territory is too densely populated with humans in order to be self-supporting. A world where urbanization is increasing fast, and moreover where urbanization is characterized by urban sprawl, is thereby a more unsustainable world. Indicators of urban unsustainability are also indicators of social conflicts, at different scales. However, sometimes environmental degradation is not socially visible. One may well ask in many Third World cities, why are there not movements by poor pedestrians and cyclists against private automobiles, not only because of the pollution they produce but also because of their disproportionate use of urban space? This is in cities where most people are poor and have no cars, nor do they expect to have cars soon. While the use of the bicycle is a "post-materialist" luxury in rich cities, perhaps a Sunday pleasure for car-owning families, or a convenient and healthy means of transport for short distances in well-regulated European cities, everyday cycling to work in cities in India among the fumes and threats of buses and private cars is the risky daily obligation of many people who perhaps cannot afford the small fee for public transport.

In a different cultural and economic context from that of India, in the United States as we have seen other urban ecological conflicts are considered under the heading of "Environmental Justice". Do such local conflicts in the United States on the siting of garbage incinerators or toxic waste dumps belong to a different system than the complaints against the foreseen location of nuclear waste in Yucca Mountain, Nevada shipped there from nuclear power stations that produce electricity for cities? Where are the actors of urban environmental conflicts actually located? Which are the real limits of the city? Do the complaints by the Ogoni and the Ijaw in the Niger Delta against oil extraction belong to the same system as the cities in rich countries where the oil exported by Shell fuels cars, and indeed where Shell has its headquarters?

Oil Extraction and the Birth of Oilwatch

Despite the repeated assertions by scientists that fossil fuel combustion should decrease in the world because of the increased greenhouse effect, and despite the awareness that burning the available reserves will be already most problematic from this point of view, nevertheless the oil frontier keeps moving into new areas at great local cost. The "new economy", pushed by information technology, is not a "dematerialized", "de-energized" economy. On the contrary, it uses more and more oil, not so much in production as in consumption. As oil extraction increases, local conflicts flare up.

Oilwatch is a south-south network concerned about oil and gas extraction (including pipelines) in tropical countries. Oilwatch is southern-based, jealous of its independence. It has member organizations in more than 50 countries, including Nigeria, South Africa, Cameroon, Gabon, Thailand, Sri Lanka, Timor, Mexico, Guatemala, Venezuela, Colombia, and Peru but not in Equatorial Guinea, Burma-Myanmar. The network is extending its reach beyond the Tropics not only to Argentina where it is already active but also to Central Asia and Russia, according to the wishes of local organizations in those areas. The secretariat has always been in Quito (led by three biologists, Esperanza Martinez, Elizabeth Bravo, Ivonne Yanez, who founded Oilwatch). There is a support group in Europe, based in the Netherlands. Oilwatch was formed in the immediate aftermath of Ken Saro-Wiwa's and his companions' deaths in November 1995, although preparations started earlier on, through contacts between Ecuador and Nigeria. The

network deals with biodiversity conservation and natural resource degradation in extraction areas, local air, soil and water pollution, loss of forests and the opening up of territories because of oil exploration (seismic lines, wells, roads), violations of human rights and indigenous territorial rights (including Convention 169 of the International Labour Organization—ILO), and the links between global climate change and the increased consumption of fossil fuels.

Oil in the Niger Delta

The language of the conflicts on oil extraction is sometimes the defence of wilderness but more and more often is that of human rights and indigenous territorial rights. On 10 November 1995, the military dictatorship of Nigeria killed nine dissenters, the most prominent of whom was the poet and playwright Ken Saro-Wiwa. Their crime had been to draw attention to the impact of oil drilling by the Anglo-Dutch oil company Shell. The Movement for the Survival of the Ogoni People (MOSOP), founded by Saro-Wiwa in 1991, had organized the opposition to Shell and its military backers. The generals in Lagos responded by threats, intimidation, arrest and finally, by judicially murdering Saro-Wiwa and his colleagues (Guha 2000:102). Human rights violations related to oil exploration and production in the Niger Delta continued after 1995. Internationally known environmental activists such as Nnimmo Bassey and Isaak Osuoka were arrested. Many people have been killed. Major multinational oil companies, not only Shell but also Chevron, Agip and Elf, are involved in those violations because they ask sometimes for the intervention of the police and the military. A Human Rights Watch's report for February 1999 stated: "The Niger Delta has for some years been the site of major confrontations between the people who live there and the Nigerian government security forces, resulting in extra-judicial executions, arbitrary detentions, and draconian restrictions on the rights to freedom of expression, association, and assembly. These violations of civil and political rights have been committed principally in response to protests about the activities of the multinational companies that produce Nigeria's oil. Although the June 1998 death of former head of state Gen. Sani Abacha and his succession by Gen. Abdulsalami Abubakar has brought a significant relaxation in the unprecedented repression General Abacha inflicted on the Nigerian people, human rights abuses in the oil producing communities continue and the basic situation in the Delta remains unchanged".

The Kaiama Declaration was signed in December 1998 by members of youth movements belonging to the Ijaw, a larger ethnic group than the Ogoni. The Kaiama Declaration stated that "all land and natural resources (including mineral resources) within the Ijaw territory belong to Ijaw communities and are the basis of our survival". It demanded "the immediate withdrawal from Ijawland of all military forces of occupation and repression by the Nigerian state". Accordingly, "any oil company that employs the services of the armed forces of the Nigerian state to "protect" its operations will be viewed as an enemy of the Ijaw people". The Kaiama Declaration asked that Nigeria become a federation of ethnic nationalities. Linking the issue of global warming to local grievances against oil companies because of human rights abuses, oil spills, land and water pollution, and gas flaring—the Kaiama Declaration finally announced that a direct-action "Operation Climate Change" would be launched on 1 January 1999, which would include extinguishing gas flares. Oil wells extract water and gas together with the oil, the water they throw into ponds or they reinject back into the soil, the gas they often flare when there is no market nearby. This implies local pollution, and also CO_2 (carbon dioxide) emissions. If the gas is not flared and it escapes unburnt, the greenhouse effect from methane would be even larger. The objective of the Ijaw youths was not to increase methane emissions to the atmosphere but rather to force the oil companies to stop operations altogether by a spectacular action. Local and global issues were thus brought together in the Kaiama Declaration. The focus for action is the flow stations, where oil, extraction water, and gas from the wells is collected and separated.

The conflict in the Niger Delta continues, as the Ogoni, the Ijaw and other ethnic groups battle against the oil companies and the Nigerian state, deploying vocabularies of human rights,

livelihood, territorial rights for minorities, federalism, and environmentalism. Events such as the death of the "Ogoni Nine" in 1995 and other struggles in the Delta, and the long struggle in Ecuador against Texaco and other oil companies, led to the birth of Oilwatch. In 1995, its newsletter, named *Tegantai* (an Amazonian butterfly, in Huaorani language), announced Saro-Wiwa's death months in advance, while European environmentalists were focusing at the time on the Greenpeace victory over Shell in the Brent-Spar case.[3]

Also in West Africa, which is one of the frontiers of oil extraction, the World Bank supports the US$ 3.5 billion pipeline between Chad and the coast of Cameroon to be built by Exxon and other companies. In Cameroon the pipeline will cross forest areas inhabited by the Bakola. One official argument for the project is that it will speed up the integration process of the Bakola into modernity, provided of course that they survive it.[4] On 6 June 2000, the executive directors of the World Bank representing 181 governments approved the pipeline, which will be used over 30 years to export a total amount of about one billion barrels of oil. A jubilant advertisement by Exxon foresaw that the revenues for both countries could help transform their economies, if they are managed properly. "To ensure that they are, Chad's Parliament and president have enacted an unprecedented revenue management program. This law imposes strict controls on the government's share of oil revenues and places project funds in special accounts that will be subject to public reviews and World Bank audits" (*New York Times*, 15 June 2000). Thus, the World Bank has not only become a proponent of "weak sustainability" but also a manager of it.

The Texaco Court Case from Ecuador

Nobody really can dispute that Texaco, whose official abode was in White Plains, N.Y., through its subsidiary in Ecuador between the early 1970s and the late 1980s polluted the water and the soil. It could plausibly be argued that its successor, Petroecuador, has inherited the same practices. The area is dotted with viscous black pools of water which was extracted with the oil, later deposited into these pools which sometimes overflow, or suddenly catch fire and fill the air with black particles. There are reports of increased cancer rates, humans becoming bioindicators of environmental damage. Texaco also opened up roads which facilitated the arrival of settlers to the forest, damaging the livelihood of the indigenous Cofans, and other tribes. It built the trans-Andean pipeline to Esmeraldas, which has had many leaks. The question of whether Texaco used different standards in the United States and abroad, on reflection it does even arise in the sense that the United States has no Amazonia. The lawyers argued in the framework of the Alien Torts Claims Act (ATCA) of 1789 intended to provide a federal forum in the United States for aliens suing domestic entities for violations of the law of nations. The District Judge in New York, Jed Rakoff (who took the case over after the death of the initial judge), initially dismissed the case on grounds of *forum non conveniens.* The government of Ecuador, through its ambassador in the United States, Edgar Terán, had claimed sovereignty rights. Later, Ecuador (in the short period in 1997 when Bucaram was the populist and corrupt President, a strange ally for the environmentalists), reversed its position, and its attorney-general officially accepted the US court's jurisdiction. An appeal against the fist dismissal was then successful. The *New York Times* (19 February 1999) stated that the case should be heard "in the only forum that can provide a fair trial and enforce penalties, an American court" but perhaps the case would be sent back to Ecuador. In September 1999, the NGO Rainforest Movement gave support to an advertising campaign in the United States on this case. There were rumours in

[3] One example of south-south networking: the Kaiama Declaration issued by the conference of Ijaw Youth Movements, 11 December 1998, was included (in Spanish) in Lorenzo Muelas Hurtado, *Los hermanos indígenas de Nigeria y las compañías petroleras. Conociendo las tierras de los indígenas negros del Delta del Niger*, issued by OilWatch. Lorenzo Muelas, a former Senator, is a leader of the Guambiano people in Colombia. See also *Tegantai* (1999), Case 3.2: "Oil activity and human rights abuse in the oil bearing Niger Delta area", by Isaac Osuoka.

[4] See *Tegantai* (1999), Case 3.1: "Chad–Cameroon pipeline and human rights" by Samuel Nguiffo, p. 29. Also, *The Guardian*, 11 October 1999.

2002 of an out-of-court settlement.[5] Other recent conflicts in Latin America are those between the Ashaninka and Elf, or between Shell and the Nahua (both in Peru), or between Maxus (later YPF, later Repsol) and the Huaorani in Ecuador, or between Repsol and Amazonian populations in Bolivia, or between Occidental Petroleum and the U'Wa in Colombia.

Such ecological distribution conflicts over the actual or potential damages from oil extraction may be fought inside one single standard of valuation, as when monetary compensation for externalities is asked for. This is the case for the indemnity for 1.5 billion US$ demanded initially from Texaco in the Ecuador case. The logic of environmental economics is here relevant, as it was for the Exxon Valdez case in Alaska in 1989. Technical questions are: Is contingent valuation acceptable to the courts? Are valuations of externalities from other cases transferable to the Texaco case in Ecuador? How to value the loss of unknown biodiversity? The conflict may also be fought across plural values, as will be seen next.

Oil in Guatemala

Perhaps one of the least appropriate sites in the world for extracting oil is the Peten in Guatemala, the northern region which borders on the Selva Lacandona in Mexico, and which still contains much primary forest and wetland, as well as the Maya ruins (such as Tikal) that are a major tourist attraction. A large part of the region was designated as the Maya Biosphere Reserve in 1990. Preservation has been helped by the United States Agency for International Development (USAID) money for the Guatemalan National Environmental Commission (CONAMA), which divided the Reserve into zones, with core zones assigned the highest priority for protection. Just across the Mexican border there seems to be lots of oil, as many people have learnt from the neo-Zapatista Marcos.[6]

The largest core zone of the Maya Biosphere Reserve is the Laguna del Tigre national park, recognized also by the Ramsar Convention on wetlands. Precisely in that area, the International Finance Corporation of the World Bank supported plans by the oil company Basic Resources to extract oil and build a pipeline that runs to the port of Santo Tomás de Castilla. The company also opened roads which helped deforestation caused by the access by settlers to forested areas. However, some local settler communities, not of pre-Hispanic origin but recent arrivals, have learnt to defend their interests through the language of community rights and sustainable development. They claim to practice sustainable forest management, and they founded the Asociación de Comunidades Forestales de Petén (ACOFOP), an organization of local forestry communities led by Marcedonio Cortave, a long-time political activist who is now also an environmentalist. ACOFOP opposes oil extraction in the Peten and the pipeline, which inevitably produces oil spills. The non-governmental organization (NGO) Madre Selva has been active trying to stop Basic Resources, and in 2002 it has also supported the resistance from local subsistence fishermen and tourist operators against oil and gas extraction in Lake Izabal in eastern Guatemala, a lake said to be sacred by the local indigenous population. There is here a confluence of the environmentalism of wilderness with the environmentalism of the poor, both currents sharing the scepticism against economic valuation.[7]

The Case against Unocal and Total because of the Yadana Gas Pipeline

In the later 1990s, Unocal (based in California), Total (based in France), and national corporations from Myanmar (Burma) and Thailand were developing the Yadana natural gas field in the Andaman Sea, and building a gas pipeline to Ratchaburi in Thailand for the production of electricity. This was a large project (the capacity of the gas-to-electricity plant

[5] See the website www.texacorainforest.org for information from both sides.
[6] See, for instance, letter from Marcos to José Saramago in *Ecología Política* (1999).
[7] Witness for Peace (1998); Solano (2000); and personal information from Magaly Rey Rosa, from Madreselva, in a visit to Guatemala on 5–11 July 2002.

will be of 2,800 MW (megawatts). It has been also a controversial project since the early 1990s. The pipeline in Thailand goes through forests, and threatens biodiversity. In Myanmar, the pipeline goes though the southern area of Tenasserim. There has been large-scale displacement of people in order to ensure the security of the pipeline. Certainly, the environment of some human groups (such as the Karen) is being disrupted. Moreover, the ruthless use of forced labour, and the forced dislocation of people, led to many complaints by human rights groups, and also by groups supporting democracy in the country. A successful preliminary case against Unocal in California claiming jurisdiction of US courts was argued by lawyers Cristóbal and John Bonifaz (Cristóbal Bonifaz is a lawyer also in the Texaco-Ecuador case) in terms of deprivation of internationally acknowledged human rights. Judge Richard Paez granted jurisdiction to a US court to proceed against Unocal for actions in Myanmar (25 March 1997), under the ATCA. The government of Myanmar was excluded from the court case, because of its sovereign immunity. Unocal was a partner of the government, and tried to hide under its sovereign skirts. However, the judge stated that Unocal could be liable on its own. The liability of both defendants (one immune, the other not) could be separated.

Total, the French company (which has a large participation in the Yadana project) had not been brought to court in France, perhaps it may be considered liable also in the United States jointly with Unocal. This is a case, as in Nigeria and elsewhere, where there are damages both against human rights and the environment, since it is impossible to separate Nature from human livelihood, and livelihood from human rights.

The Unocal-Myanmar case is similar to the Texaco-Ecuador case in that the main issue is the preliminary one of whether US courts have jurisdiction. But the case is different on two counts. First, it was accepted by the judge that forced labour being like slavery or perhaps torture, the Unocal case belonged to a peremptory international law which was immediately applicable. In Ecuador the question under discussion was not forced labour but damage to the environment and to human health. Moreover, in Ecuador the plaintiffs asked for reparation of damages caused by Texaco between 1970 and 1990, and it could be argued that this would not be possible without the participation of Petroecuador, Texaco's successor, a state company that owns the wells and the oil pipeline running over the Andes to the port of Esmeraldas on the coast. In contrast, in the Unocal case, the plaintiffs said in 1996–1997 that, if granted jurisdiction in a US court, they would not ask for reparations at this stage but only for an injunction stopping Unocal from giving money to the military rulers, and obliging it to withdraw from Myanmar. This Unocal could do by itself (according to Judge Paez), separately from any decisions by the military rulers, and by the Myanmar gas and oil company.[8] The court order was something of a shock. There were reports in business journals that, in view of the current growth of major infrastructure and natural resources projects in emerging economies in which the host governments usually play a significant role, companies should be aware of the novel application of the ATCA against American companies (see Miedzianogora et al. 1997). As in other cases related to mining in Indonesia, South Africa and Namibia, and related to oil in Nigeria, perhaps the new democratic governments, including one day in Burma-Myanmar itself, will help to establish claims for the payment of compensatory retrospective damages to their own citizens in foreign courts, in many cases already too late. Or, perhaps, democratic or not, such governments will not wish to antagonize the multinational companies. However, court cases held in the United States, Europe or Japan would bring into the open the environmental and social injustices much more than court cases in Third World countries would do. Also, the documentary evidence of decisions by Texaco, Unocal, Union Carbide, Repsol, Elf, Shell, Exxon, Rio Tinto or Freeport, are in their main offices.

[8] See *Tegantai*, 1999:18–24; Oilwatch, *The Oil Flows: The Earth Bleeds*, by Noel Rajesh from Towards Ecological Recovery and Regional Alliance (TERRA)—Thailand, 1999:148–159; and, for Judge Paez's decision, the website www.yale.edu/lawweb/Avalon/Diana/unocal/31198-1.htm (project Diana on international human rights, at Yale University Law School).

Now, it is implausible that tribal peoples themselves would know about the possibilities of international litigation, and that they would decide to hire a particular lawyer from New York, Los Angeles, London, Paris or Tokyo. In some cases, their own governments would not allow this. Moreover, tribal peoples or rural peoples in general, speak the languages of the Third World. Unless there is outside intervention by activists, or perhaps directly by outside lawyers (as in the dibromochloropropane—DBCP—case for sterility of banana plantation workers in Costa Rica and in Ecuador), a "class-action" suit would never materialize. In the Unocal case in March 1997, the plaintiffs from Burma were described in the Californian court under the unlikely names of John and Jane Doe, and Baby Doe—because of the peril of reprisals by a dictatorial government.

Litigation against multinational companies *inside* their countries of origin for damages done abroad is therefore becoming one instrument for corporate accountability. The calculus of damages is that such civil litigation cases will provide interesting ingredients for the valuation of the "ecological debt" from North to South. While economic logic, North and South, is that "the poor sell cheap", judicial logic in awarding punitive damages beyond reparation costs, might be different.

Material Interests and Sacred Values: The U'Wa

Commitments or pledges towards Nature characterize the variety of environmentalism described as the "cult of wilderness", while a material interest in the environmental resources and services provided by nature for human livelihood characterizes the environmentalism of the poor. The very concept of ecological distribution conflicts implies conflicts of interests. Shall we then conclude that there is an Environmentalism of Values versus an Environmentalism of Interests? Not so. When the U'Wa in Colombia in a famous conflict in the late 1990s, refused entry to their land to Occidental Petroleum, threatening mass suicide, they claimed that not only the surface land but also the subsoil was sacred, and should not be defiled by oil exploration. This is a vocabulary of protest, which implies a denial of nature as capital, that is, the impossibility of compensation for externalities in monetary terms. The U'Wa, a tribe of 5,000 people, was successful in getting the Supreme Court in Colombia to annul the permission granted to Occidental Petroleum because of lack of prior informed consent, and was also successful later in expanding their communal territory up to some 200,000 hectares. However, the Colombian Minister of the Environment, Juan Mayr, a former environmentalist, granted permission in 1999 to Occidental Petroleum to open its first oil well, just five hundred metres away from the limit of the expanded U'Wa territory. In reply the U'Wa (supported by numerous environmental groups inside and outside Colombia), invaded the site of the well, camping there at the end of 1999. The U'Wa appealed to their indigenous territorial rights (*resguardo indígena*) under the constitution of Colombia. The U'Wa case is only one of perhaps one hundred indigenous communities threatened at present by the oil and gas industry in tropical countries. Certainly, the appeal to sacredness has contributed to its popularity. There is no doubt that the land is sacred in Native America. That Sira, the creator, also declared that the subsoil is sacred, and that oil is like blood inside the arteries and veins of the Earth, seems perhaps a recent theological strategy which pressed by their international audience, the U'Wa deployed to keep the oil company out. Actually, the mere existence of oil inside the earth, let alone its sacredness, is not so obvious before seismic exploration and drilling take place—this is precisely the point of confrontation. We realize then that different languages of resistance, of different vintages, are deployed at the same time. Are they compatible? The U'Wa did not say, but could have said, that they would bring a class action suit against Occidental Petroleum in the United States asking for economic compensation for damages once oil exploration starts. In 1999, as reported by Oilwatch, one of the oil wells that long ago had been opened by Texaco in Ecuador, Dureno 1, was symbolically claimed back by the Cofans who performed a religious ceremony for the occasion. No oil platform has ever been religiously sanitized in the North Sea.

Conclusion

In the international NGO environmental movement, the relations between local and global concerns are established through single-issue networks or organizations such as the International Rivers Network, MineWatch, Project Underground, the World Rainforest Movement, RAFI (now ETC), the Pesticides Action Network, or through specific programmes and campaigns of confederal organizations such as Friends of the Earth, or thanks to the help of global environmental organizations such as Greenpeace. Oilwatch, born of community struggles against oil and gas extraction, provides south-south links among activist groups in tropical countries. Oilwatch (according to its own image) works to keep the oil frontier from expanding asking for a moratorium on oil extraction in such areas, at the same time trying to force oil and gas companies, and governments, to see oil and gas extraction in the context of global warming. Has Oilwatch had any impact on international trade policies, persuading governments to impose a "natural capital depletion tax" on oil exports, or moving oil and gas into "fair trade" chains? To what extent has it been successful in linking up politically both ends of the "commodity chain", extraction of oil and gas, and carbon dioxide production? Are local activists interested in global greenhouse politics?

In 1995, Sunita Narain from the Centre for Science and Environment of New Delhi, joint editor of the periodical *Down to Earth*, who in 1991 proposed with Anil Agarwal a platform of "equal rights to carbon sinks and reservoirs" for everybody in this world, visited the United Sates to meet academics and activists of the Environmental Justice movement. As she herself reported, "having worked for environmental justice at the national level, this group was attracted to the concepts put forward in the book by us, asking for justice in global environmental governance" (*Notebook*, 1996:9). Environmental groups in Venezuela ("Orinoco Oilwatch") published a long open letter to President Clinton on 9 October 1997, on the eve of his visit to the country, complaining about American oil companies' operations in areas inhabited by the Waraos and other indigenous groups, and pointing out the incongruity between Clinton's and Gore's well publicized alarm at the increased greenhouse effects (shown recently at a press conference in Washington on 6 October 1997), and Venezuela's plans (later discarded) to increase oil exports with American support to 6 million barrels a day.[9] We see here repeated instances of combining local and global views in the defence of the environment. This is not "Not in my back yard!" (NIMBY) politics. And this is not identity politics.

Oilwatch groups around the world complain against local impacts, but they also point out that more oil and gas extraction means more carbon dioxide production (though this would not be so if gas substituted for coal or oil, instead of adding to them). Thus at Kyoto in 1997 Oilwatch issued a carefully crafted Declaration eventually signed by over 200 organizations from 52 countries calling for a moratorium on all new exploration for fossil fuel reserves in pristine and frontier areas, making the point that the burning of oil, gas, and coal is the primary cause of human-induced climate change, and that the burning of even a portion of known economically recoverable fossil fuel reserves would ensure "climate catastrophe". The evaluation of all power projects should involve consultation with the communities most affected by them, respecting their right to refuse projects—what would be constructed as a veto threshold in multi-criteria evaluation, similar to the endangered species provision in environmental management in the United States. Simultaneously, Oilwatch demanded that oil, gas and coal prices "properly reflect the true costs of their extraction and consumption, including the best estimate of their role in causing climate change in order to apply the polluter pays principle to reflect the cost of carbon in the price". The Declaration also asked for full recognition of the ecological debt as it relates to the impacts of fossil fuel extraction, for a legally binding obligation to restore all areas affected by oil, gas, and coal exploration and exploitation by the corporations or public entities that are responsible, and that public investments (including World Bank funds) which presently go to subsidize fossil fuel extraction and consumption be used instead for clean, renewable and

[9] Letter published in *Ecología Política*, 14, 1997.

decentralized forms of energy (the micro-power revolution) with a particular focus on meeting the energy needs of the poorest 2 billion people.[10]

Some other questions come to mind from the cases briefly described. Are the technologies and the environmental standards in different parts of the world similar? Are some ecosystems (mangroves, rainforests) so different from older areas of extraction, that different standards should be applied?

How are damages valued, in which languages are valuation conflicts represented? Are economic methods such as those used in the Exxon Valdez case of 1989, applied in other cases around the world? Who has the power to impose methodologies of valuation? Are the languages of human rights (Niger Delta), indigenous territorial rights (Huoarani, Cofan in Ecuador), sacredness (U'Wa in Colombia) commensurate with the economic language of valuation? Is a cost-benefit approach adequate, or rather a multi-criteria evaluation framework? How should we calculate, for instance, the loss of unknown biodiversity? Are there similarities between Third World oil and gas conflicts and USA "environmental justice" conflicts (in Louisiana, for instance)? Is the language of "environmental racism" deployed in conflicts in the Third World? Are there alliances between such movements and the environmentalism of wilderness of the WWF, IUCN?

Mangroves: A Tragedy of Enclosures

Shrimp are produced in two different ways. As for other commodities in world trade, by studying such *filières* or commodity chains, we can identify and follow the interventions of different actors at different points in the chain, motivated by different interests and values. Shrimps are fished in the sea (sometimes at the cost of turtle destruction) or they are "farmed" in ponds in coastal areas. Such aquaculture is increasing as shrimp become a valuable item of world trade. Mangrove forests are sacrificed for commercial shrimp farming. This section considers the conflict between mangrove conservation and shrimp exports in different countries. Who has title to the mangroves, who wins and who loses in this tragedy of enclosures? Which languages of valuation are used by different actors in order to compare the increase in shrimp exports and the losses in livelihoods and in environmental services? The economic valuation of damages is only one of the possible languages of valuation, which are relevant in practice. Who has the power to impose a particular language of valuation?

In many coastal areas of the tropical world, in Ecuador, Honduras, Guatemala, Colombia, Sri Lanka, Thailand, Indonesia, India, Bangladesh, Philippines, Malaysia, there is social resistance against the introduction of shrimp farming for export since this implies the uprooting of mangroves in order to build the ponds. In such areas, poor people live sustainably in or near the mangrove forests, by collecting shellfish, by fishing, by making use of mangrove wood for charcoal and building materials. The mangroves are usually public land in all countries, being in the tidal zone, but governments give private concessions for shrimp farming or the land is enclosed illegally by shrimp-growers. Illegality is prevalent not only because of the public character of the land but also because there are often specific environmental laws and court decisions protecting the mangroves as valuable ecosystems.

Shrimp or prawn production entails the loss of livelihood of people living directly from, and also selling, mangrove products. Beyond direct human livelihood, other functions of mangroves are also lost, perhaps irreversibly, such as coastal defence against sea level rise, breeding grounds for fish, carbon sinks, repositories of biodiversity (e.g. genetic resources resistant to salinity), together with aesthetic values. Pollution from the shrimp ponds destroys the local

[10] The OilWatch/NGO Kyoto Declaration of 2 December 1997 may be found in www.oilwatch.org and in websites of many other organizations.

fisheries. Also, wild shrimp disappear because of the loss of breeding grounds in mangroves and because they are over harvested as seed for the ponds. As John Kurien has put it: "Large tracts of coastal lands and expanses of open seas, which were under the control of the State and/or having some customary rights of access to local communities, are being handed over to industrial interests to raise shrimp or harvest fish. This has created the beginnings of a modern enclosure movement, pushing out from the coastal lands and offshore sea, persons who had traditionally made a livelihood from these natural resources" (Kurien 1997:116).

The focus of this chapter is on shrimp aquaculture, strongly supported by the World Bank as part of the drive for non-traditional exports to repay the external debts and to enter the path of export-led growth. The Blue Revolution was going to produce "pink gold". A new world industry of about US$ 10 billion exports per year has indeed been created, at high cost. It is a non-sustainable industry, migrating from place to place, leaving behind a trail of barren landscapes and destitute people. What was traditionally, in some areas, small-scale use of marine resources, or traditional aquaculture, became privately owned single-purpose enterprises. Not only mangroves, also some farming areas have been destroyed particularly in India and Bangladesh where small farmers who once harvested rice and other crops near the sea in small plots of land, have been dislodged by force, or by salinization from the encroaching shrimp ponds.

People who make a living in the mangroves are learning to introduce the words "environment" and "ecology" into their vocabularies of protest. It is the intermediary NGOs who have given an explicit environmental meaning to their livelihood struggles, connecting them into wider networks. In Ecuador in 1999, a local group, Fundación de Defensa Ecológica Ecuador (FUNDECOL), distributed a message to international environmental networks with the following call from a woman against what would be described in the United States as "environmental racism":

> "We have always been ready to cope with everything, and now more than ever, but they want to humiliate us because we are black, because we are poor, but one does not choose the race into which one is born, nor does one choose not to have anything to eat, nor to be ill. But I am proud of my race and of being *conchera* because it is my race which gives me strength to do battle in defence of what my parents were, and my children will inherit; proud of being *conchera* because I have never stolen anything from anyone, I have never taken anybody's bread from his mouth to fill mine, because I have never crawled on my knees asking anybody for money, and I have always lived standing up. Now we are struggling for something which is ours, our ecosystem, but not because we are professional ecologists but because we must remain alive, because if the mangroves disappear, a whole people disappears, we all disappear, we shall no longer be part of the history of Muisne, we shall ourselves exist no longer . . . I do not know what will happen to us if the mangroves disappear, we shall eat garbage in the outskirts of the city of Esmeraldas or in Guayaquil, we shall become prostitutes, I do not know what will happen to us if the mangroves disappear . . . what I know is that I shall die for my mangroves, even if everything falls down my mangroves will remain, and my children will also stay with me, and I shall fight to give them a better life than I have had . . . We think, if the *camaroneros* who are not the rightful owners nevertheless now prevent us and the *carboneros* from getting through the lands they have taken, not allowing us to get across the *esteros*, shouting and shooting at us, what will happen next, when the government gives them the lands, will they put up big "Private Property" signs, will they even kill us with the blessing of the President?"[11]

Killing threats must be understood literally, even in Ecuador, which has been an island of peace between Colombia and Peru. In Champerico, Guatemala, in May 2001, the local population complained against Camaroneras del Sur. Shots were fired into the crowd, one young person

[11] Message from Fundecol@ecuanex.net.ec of 11 March 1999. *Concheras* are women who collect shellfish (Anadara tuberculosa) mostly for selling, also for subsistance. *Camaroneros* are the owners of the shrimp ponds (*camarón* being the shrimp). *Carboneros* are charcoal makers. *Concheras* get across *esteros* (the swamps) by boat to get to the mangroves and collect the shells at low tide. The majority of the coastal population of the province of Esmeraldas in Ecuador is of African descent.

was killed. The resistance movement in Honduras has suffered many victims. It rests on the Comité para la Defensa y Desarrollo de la Flora y Fauna del Golfo de Fonseca (CODDEFFAGOLF) led by Jorge Varela, recipient of the Goldman Prize in 1999. An international meeting in Honduras in 1996 (with representatives from Latin America, the United States, India, Sweden) had issued the Declaration of Choluteca (16 October 1996) asking for a worldwide moratorium on shrimp farming. After the deaths of October 1997, Varela stated: "Today, the artisanal fishermen cannot move freely across the swamps and mangroves where before they found their livelihood (*sustento*), for the camaroneros have appropriated not only the land concessions granted to them by the government but also the surrounding areas. With the complicity of our government, we have given away our people's patrimony to a few national and foreign individuals, and we have deprived thousands of persons of their livelihood. We have turned the blood of our people into an appetizer . . .".[12] Such statements carry the implication that human life and human dignity have dimensions beyond money and also beyond ecological values. The appropriate languages are livelihood, food security, human rights, community territorial rights, and not "the internalization of externalities" in the price system, or the "polluter pays principle", or "cost-benefit" analysis, or environmental impact assessments.

Shrimp Farming in South and South-East Asia

While Ecuador was producing about 105,000 metric tons of shrimp in 1995 (of which about 95 per cent farmed, and only 5 per cent fished), other giants of the industry were Thailand and Indonesia, the first one with 330,000 tons (of which 67 per cent farmed), the second one with 195,000 (of which 41 per cent farmed). Vietnam is rapidly increasing its farmed shrimp production. India and Bangladesh are important producers but opposition is strong in both countries. China is an important producer, and Taiwan's industry flourished in the 1970s, and then declined. The world total production of shrimp was in 1995, 2,607,000 tons of which 712,000 tons farmed and 1,895,000 fished. The trend is towards an increase in farmed shrimp, and a decrease of wild caught shrimp because of overexploitation of fisheries and because of turtle protection.[13]

In the Philippines, aquaculture activities were primarily responsible for the clearing of more than 338,000 hectares of mangrove forest since 1968, and seriously affected the coastal fisheries catch (Gopinath and Gabriel 1997:201). Broad and Cavanagh (1993:114–115) reported: "Eliodoro 'Ely' de la Rosa, a forty-three year old father of five, had been a fisherman and a leader of the fishers' group LAMBAT . . . Ely was deeply concerned that Manila Bay was dying and that there would be no fish for his children and grandchildren. He talked of his organization's efforts to halt the destruction of the coastal mangroves. He spoke eloquently of the dangers of prawn pond expansion, of the need to stand up to the prawn-pond owners and other mangrove destroyers, and of his plans to start a mangrove replanting program. For his visions and for his ability to inspire others to take action against the impediments to these visions, he was murdered" (on 22 January 1990). (For the general context in the Philippines, see Primavera 1991).

In Thailand, despite the opposition of environmental groups such as Yadfon in Trang province, the destruction of mangroves has followed a familiar pattern. Ponds have an average life-span of less than five years: "shrimp farmers simply march down the coastline, leaving hundreds of miles of poisonous brown blotches in their wake. The ponds saturate the surrounding soil with salt and pollute the land and water with a chemical sludge made up of fertilizer and antibiotics as well as larvicides, shrimp feed and waste" (Mydans 1996).

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[12] Journal *La Tribuna*, section "Ecocomentarios", 29 October 1997; see also Communications for a Sustainable Future (CSF) website at http://csf.colorado.edu/elan/nov97/0038.html, section on Ecology and Environment in Latin America (ELAN), 9 November 1997.

[13] *Shrimp News International*, an industry publication issued by Bob Rosenberry, San Diego, California, 1996.

In Bangladesh, the coastal shrimp farms are located in the Cox's Bazaar district in the east, and Satkhira, Khulna and Bagerhat districts in the west, where large landowners have appropriated the lands of small farmers and turned them into shrimp farms, with the loss of trees, fodder and drinking water, and the salinization of fields. There are also movements by fishermen who complain against the loss of fisheries: "They are creating alternatives. They want to fill all the ponds with soil and plant mangroves" (Ahmed 1997:19). In the Chakaria Sunderbans, in Cox's Bazaar, some 50,000 acres of mangroves have been converted into shrimp ponds since the early 1980s, with initial support from the World Bank. Television reports of flooding and loss of life in Bangladesh are regularly seen in Northern homes, but the connection to destroyed mangroves, abandoned shrimp farms, and decreased coastal defence against cyclones is not often made. Deforestation has left the area highly vulnerable to sea-water intrusion when cyclones strike. Thus, the lack of food security because of the enclosure of the mangroves in order to produce a luxury export product is compounded by environmental insecurity. There have been some deaths in shrimp conflicts in Bangladesh, the most famous that of Karunamoi Sardar on 7 November 1990 defending her village of Horinkhola, in Khulna. That village and some surrounding villages have declared themselves a "shrimp-free" zone, and every 7 November thousands of peasants gather there in memory of Karunamoi Sardar and in solidarity with the resistance of her village against the shrimp industry (Ahmed 1997:15).

In Indonesia there was still a plan in the year 2000, under the name Protekan 2003, to increase shrimp production at the expense of mangroves in the next three years, occupying an extra 320,000 hectares, after a viral disease destroyed most of Indonesia's shrimp production in 1995. In comparison, shrimp ponds in Ecuador (the largest Latin American producer), whether active or already abandoned, occupy 210,000 hectares. Land to be used for shrimp production in Indonesia is often taken away from mangrove forests or from villagers by force and physical violence. Clashes will undoubtedly take place in the new, more democratic atmosphere (Siregar 1999:6; Siregar and Hafild 1999). The pressure for increasing shrimp farming comes from the demand in rich countries, and from the decline in the sea shrimp fishery. In Indonesia most of the shrimp ponds originally concentrated in the north coast of Java where mangrove forest were destroyed between the mid-1970s and the mid-1990s. Nowadays, most of these ponds are abandoned because of low productivity and environmental degradation, and there is a search for new frontiers. The Protekan 2003 plan looks towards the south coast of Sulawesi, Kalimantan, Maluku. Some of the largest shrimp entrepreneurs in Indonesia are Thai firms, in a characteristic migrating pattern after destroying their own mangroves. These firms use sometimes a "nucleus-satellite" contracting system, buying the farmed shrimp from local suppliers.

In India, commercial shrimp farming started with a US$ 425 million loan from the World Bank in the mid-1980s, to which government subsidies were added. As in Bangladesh and other countries, the shrimp farms invade not only mangroves but also agricultural areas near the sea in states such as Tamil Nadu and Andhra Pradesh. Former farms become salinized and have no further agricultural use once the shrimp farms fall into disuse. "It has been estimated that at least 9,000 hectares of paddy lands have been rendered useless in the coastal mandals of Andhra Pradesh as a result of the aborted blue revolution of modern shrimp aquaculture" (Vivekanandan and Kurien 1998:31–32). Pumps and pipes to draw sea-water into the ponds, and channels to discharge polluted water, interfere with the coastal fishermen's tasks. Groundwater is also polluted. In India, "responding to this destruction of their livelihoods, landless and impoverished coastal dwellers took their struggle for justice to the streets, the state-level bodies and finally to the courtroom" (Ahmed 1997:4). In December 1996, the Supreme Court of India delivered a remarkable verdict. The court comprised judge Kuldip Singh, the litigation was filed by the noted elderly Gandhian S. Jagannathan together with an NGO called the Preventive Environmental Protection Approaches in Europe (PREPARE), and it was argued by lawyer M. C. Mehta. The court ordered the closure of all commercial aquaculture operations within 500 metres of the high-tide line, or within 1,000 metres off the coast of Lake Chilika in Orissa, forbidding shrimp farms in converted agricultural areas also beyond such limits. The

verdict directed that the prawn farms should treat their workers as "retrenched", in the meaning of the Industrial Disputes Act. They should be paid compensation equal to six years' wages, as ordered (also by judge Kuldip Singh) in the case of workers in polluting industries in Delhi, which opted for closure instead of relocation (see above). The decision rested on a cost-benefit analysis commissioned by the court and carried out by NEERI (the National Environmental Engineering Research Institute). The export earnings ("forex") were given a premium value in the cost-benefit analysis. NEERI calculated (in monetary terms) that India's prawn industry in 1994 generated four times as much environmental damage as the value of its export earnings, but of course the results of cost-benefit analyses will depend very much on the time horizon considered, on the discount rate applied, and on the fictitious values chosen for extra-market costs and benefits. The court's decision was not only based on this cost-benefit analysis (whose results went against shrimp farming) but also on studies of environmental impact and other considerations. The decision helped the resistance movement against shrimp farming not only in India but also around the world.[14]

The movement in India against industrial shrimp farming involves displaced peasants, as in Bangladesh, but it is also part of a large movement for the defence of artisanal fisheries. It comprises hundreds of thousands of fish workers who complain against trawlers that fish in the deep sea and discard large quantities of fish caught in the trawl—a bag like net dragged by the vessel—and that export part of their catch. Trawlers are sometimes owned by joint venture firms, with foreign participation. On 4 February 1994 there was a strike organized by the national Fish workers' Forum, a federation of small-scale, artisanal fishermen of all coastal states in India. There was no fishing or unloading of fish during the strike. The same movement denounced the tensions caused by the expansion of shrimp production in Chilika Lake in Orissa, where there are new developments after fishermen successfully forced Tata industries to withdraw their plans for aquaculture in the early 1990s. On 11 June 1999, four fish workers, including one woman, demonstrating against illegal prawn farms, were killed by the police.[15]

Mangroves Threatened in East Africa

Outside South and South East Asia and Latin America (where large mangrove forests in Colombia, Venezuela, Brazil are still intact), the shrimp frontier advances also in East Africa. In Tanzania, a project by the African Fishing Company for almost 10,000 hectares of prawn farming in the Rufiji Delta has given rise to much opposition. A previous projects had been proposed by the Norwegian Agency for Development Cooperation (NORAD), a private company, and the Bagamoyo Development Corporation in the early 1990s. It was not implemented. It led to the dismissal for corruption of the Minister of Lands: "the Minister had attempted to insert himself into the venture by allocating the land reserved for construction of the prawn farm to a business partner" (Gibbon 1997:81).

The Rufiji Delta contains some 20 islands and 31 villages with more than 40,000 people, and is famed for supporting the largest continuous block of mangrove forests (53,000 hectares) in East Africa. "The Rufiji Delta is one of the most physically stunning areas in Africa. Over an area of perhaps 1500 square kilometres a web of rivers and channels intersect seemingly endless mangrove stands, interrupted occasionally by rice fields" (Gibbon 1997:5). In this area there is fishing of wild prawns. Conflicts between artisanal fishermen and trawlers have been researched by Gibbon (1997). The prawn farming project introduced a new type of conflict. It raised a storm of protest from environmentalists and from some local communities that would be displaced. This enormous project became an issue in national politics, being strongly opposed by the Journalists' Environmental Association. The promoter of the project, the African Fishing Company, was said to belong to Reginald John Nolan, an Irish investor whose money came

[14] The Supreme Court decisions in India, in this and other "green" cases in the present report, are collected in Divan and Rosencranz, 2001.

[15] Email from Thomas Kocherry, co-ordinator, World Forum of Fish Harvesters and Fishworkers (WFF).

from selling arms (Gibbon 1997:52). Support from outside organizations such as Prepare from India, and the Natural Resources Defence Council from the United States, was brought to bear on the government of Tanzania. The WWF also intervened, proposing a project for so-called improved prawn farming in the Rufiji Delta to the MacArthur Foundation (which sometimes promotes controversial "eco-efficiency projects" in the Third World), with a view "to document when and how constructive criticism can be best used to improve proposed projects". The WWF's conciliatory approach was opposed by the Mangrove Action Project: "What right does any one NGO have in experimenting with the shrimp farm project in the first place? It is the local inhabitants of Rufiji who will be subjected to such a grand test, which risks the future of both the environment and the local communities".[16] This is a type of situation that is not uncommon. Organizations such as the WWF and the main American Foundations are closer in cultural terms to large foreign investors than to the local people whose livelihood is threatened, and they do not yet always adopt an "environmental justice" perspective.

As in Tanzania in the Rufiji Delta, also in Kenya in the Tana Delta there are plans for industrial shrimp farming. Hence the Mombasa Declaration of 6 February 1998 on mangrove conservation and industrial shrimp aquaculture drawn up at a workshop co-sponsored by the East African Wildlife Society, Prepare, the Mangrove Action Project, and the Swedish Society for Nature Conservation, an interesting alliance among NGOs concerned with the defence of wilderness, and with environmental justice and the environmentalism of the poor.

The Turtle Conundrum, and the Call for a Consumers' Boycott of Farm-Raised Shrimps

It took a few years for Northern environmentalists to become aware of the connection between shrimp exports and mangrove destruction. Initially, their main worry about shrimps was fishing in the high seas and the death of turtles. The Earth Island Institute, through Todd Steiner of the Sea Turtle Restoration Project, successfully had put the turtle issue in the US trade agenda in the early 1990s. In May 1996 the US government agreed that shrimps could not be imported into the United States from countries whose trawlers did not use Turtle Excluder Devices (TEDs). Still three years later, at the anti-WTO demonstrations in Seattle in 1999, there were many people disguised as turtles. Is it more difficult to see the world from the perspective of a female shellfish collector than from the perspective of an ensnared turtle?

In response to the US turtle outcry of May 1996, India started "to issue certificates to marine exporters declaring that trawlers catching fish and shrimp in the high seas have taken measures to use Turtle Excluder Devices . . . (moreover) certificates for "turtle safe" shrimp were being issued to shrimp caught in inland waters or shrimp from aquaculture farms".[17] Several Southern governments took the United States to the General Agreement on Tariffs and Trade—GATT (later the WTO)—complaining against the requirement to certify that shrimp were caught in turtle-safe nets. In 1998, the WTO unfortunately overruled the US decision that required wild shrimp imported into the United States to be caught in such a way that turtles were not killed.[18] Progress has been made in imposing the use of TEDs in many countries though it is a fact that many thousands of turtles (such as the Olive Ridley turtles in eastern India) are killed every year by illegal trawling. Not only in the North, also in the South there are groups concerned with turtles, so it is not accurate to view attempts to stop the killing of turtles when fishing shrimp (or the killing of dolphin when fishing tuna) as the foisting of Northern environmental values on Southern peoples. Similarly, not only in the South, also in the North there are some NGO and groups of people concerned with the destruction of mangroves, though the strongest protests

[16] *JET News*, the Newsletter of the Journalists Environmental Association of Tanzania (JET), Dar es Salaam, November 1998; and email from Alfredo Quarto, Mangrove Action Project, 28 April 1999.

[17] Karir, Gurpreet and Vandana Shiva, *A Cosmetic Ban—Why the U.S. Shrimp Ban Will neither Save Turtles nor People.* Sent by email to environmental groups, 22 June 1996.

[18] Swardson, Ann, "Turtle protection law overturned by WTO", *Washington Post*, 13 October 1998, p. C2, cited by Shabecoff, 2000: 163. Also, Hilary French, 2000:121–123.

come from the South, where a number of people have lost their lives directly (and many more have lost their livelihoods indirectly) while defending the mangroves against shrimp aquaculture.

There was then a danger, which is today acknowledged by environmental groups North and South that the ban on wild shrimp could lead to an undesirable expansion of the volume of farmed shrimp around the world. In Ecuador, where 95 per cent of exported shrimp are farm-raised, local environmental groups were baffled by the insistence of US groups on banning imports of wild caught shrimp, while they themselves were proposing at high local risk a Northern boycott of farmed shrimp imported from Ecuador. Also in 1995, the movement in Orissa, India, of coastal fishermen and farmers that included the Chilika Bachao Andolan which had defeated Tata Industries in 1992 in their attempt to cultivate shrimp in Lake Chilika, held a convention. It called upon "the affluent countries to boycott prawn imports for consumption of this luxury item, which is nothing but the blood, sweat and livelihood of the common people of the third world countries" (see Ahmed 1997:11).

Conclusion

At each of the particular locations where the conflict of mangroves vs. shrimp exists, we could ask, what is the value of shrimps compared to the value of lost livelihoods and the value of lost environments? In which metrics should such values be measured?

A team of economists performed in 1999 a cost-benefit analysis of shrimp aquaculture in Thailand, looking at Tha Po village, on the coast of Surat Thani province where about 130 households depend almost entirely on fishing for their livelihood. The area around the village used to be covered by mangrove. In the past decade over half of the area has been cleared for commercial shrimp farming. Thailand's exports of frozen shrimp produce annually about $1200 million in foreign exchange. In order to put a money value on the destroyed mangroves, Dr. Suthawan Sathirathai and her colleagues gave money values to fuel wood and other products, and also translated into money values their environmental services as nurseries for fish and a barriers to storms and soil erosion. In financial terms, taking into account marketable products only, the net present value (NPV) per rai (6.25 rai = 1 hectare) of a commercial shrimp farm was far higher than the NPV of a rai of mangrove forest—US$3,734 against US$ 666. However, taking into account the indirect benefits from mangroves, considering that shrimp farms are only profitable for approximately five years and taking into account that replanting must then wait for fifteen years, the NPV of mangroves per rai would increase up to US$ 5,771. Such figures depend very much on the chosen discount rate. The higher the discount rate, the less the mangroves are worth in comparison to the shrimp farms. A slight increase in the rate of discount applied in such analysis would condemn the mangroves (Sathirathai 1999). However, as mangroves become more and more scarce, a case could be made (inside a neoclassical framework) for applying Krutilla's rule (Krutilla 1967), favouring mangrove conservation. Nevertheless, previous to manipulations such as ad-hoc discount rates and fancy monetary valuation of environmental services, another question arises. Namely, do all the actors of the conflict wish to be ensnared in monetary cost-benefit valuation, or do they prefer (given their own interests and values) to move outside into a multi-criteria perspective? A cost-benefit analysis could be one of the relevant criteria, though not necessarily a decisive one. Who has then the "procedural power" to choose the languages and techniques of valuation?

Despite judicial decisions such as that in India in 1996, the trend towards mangrove destruction continues worldwide, fuelled in part by shrimp consumption in rich countries, stopped only by virus outbreaks in shrimp farms or by local environmental movements. Southern calls for Northern consumer boycotts on farmed shrimp have gone unheeded, even inside environmental networks. The situation is not one of Northern "green protectionism" against imports produced with low environmental standards (as in the case of complaints against shrimp or tuna fish imports which imply the death of turtles or dolphins). On the contrary, the Northern consumers

profit from prices of imported farmed shrimp that do not include compensation for local externalities (a general rule that also applies to substantial items such as cheap oil, wood, copper or aluminium imports), and Southern complaints have not yet successfully alerted Northern consumers to the damages suffered in the exporting territories. Meanwhile, world demand for farmed shrimp keeps increasing, with most consumers still blissfully unaware of the social and environmental havoc they cause.

Plantations Are Not Forests

Pressed to earn foreign exchange, the state Forest Department of Thailand initiated, in the late seventies, the conversion of tens of thousands of hectares of natural forests into plantations of eucalyptus, in order to provide chips for paper mills, mostly owned by Japanese companies. Peasants in the forests began opposition to the plantations. They believed that their rice fields would be affected by the proximity of the eucalyptus; they also mourned the loss of the mixed forests from which they harvested fodder, fuel, fruit and medicines. Peasant protesters were mobilized by Buddhist priests, who led their delegations to public officials and also conducted religious ceremonies to prevent natural forests from being turned into regimented tree plantations (Guha 2000; Lohman 1991, 1996:40). Thus, one hundred years after Pinchot introduced "scientific forestry" to the United States, the conflict between plantation forests and "true" forests is coming into the open in the Third World. In many regions of the tropical world, this is a conflict of mono-specific, exotic tree plantations against biodiverse forests with many species of trees (sometimes as many one hundred per hectare). In other regions (at southern latitudes in South America, for instance), the forest is perhaps also mono-specific, and the alternative is between this native forest (old, slow-growth forest) that is cut, turned into chips, exported, and either deforestation or new plantations of quickly growing pines. Resistance movements to tree plantations have developed in Thailand, Indonesia, Brazil, Costa Rica, Guatemala, Venezuela and many other countries. Only one of such cases will be described here.

Stone Container in Costa Rica

On 7 December 1994, the young and vital leaders of the Asociación Ecologista Costarricense (AECO): Oscar Fallas, Maria del Mar Cordero, and Jaime Bustamante died in the night in a fire at their home in San Jose. The official verdict was accidental death. Time will perhaps tell whether there was an attempt to frighten or even kill them, but this is an issue we cannot pursue here. Maria del Mar and Oscar (whom I had met several times) had been involved throughout 1993–1994 in the conflict against Stone Container in the Osa Peninsula and Golfo Dulce in south-west Costa Rica, and they were getting ready for a conflict in northern Costa Rica against Placer Dome, the noted Canadian gold mining company.[19] They were practitioners of an "environmentalism of the poor", outside mainstream Costa Rican environmentalism that has been so much influenced by US conservationist organizations and personalities (such as Daniel Janzen). Their loss is still felt among radical environmental groups in Costa Rica and in other Latin American countries loosely allied since the Rio NGO summit of 1992. AECO was the Costa Rican member of Friends of the Earth International. Maria del Mar and Oscar had just achieved a partial victory in their conflict with Stone Container, they had placed themselves at the confluence between local interests in livelihood and international groups in defence of the forests such as the Rainforest Action Network and Greenpeace. They had learnt how to manoeuvre inside the permeable Costa Rican state, a democracy with such a degree of internal consensus among the social forces and the main political parties that sometimes it feels like a corporatist state closed to dissidents. They profited from the environmental image that President Figueres (1994–1998) and his Minister for the Environment, René Castro, wanted to promote.

[19] The conflict with Stone Container (a US paper company) has been narrated by Helena van den Hombergh (1999) in an excellent book, which is a tribute to the activists of AECO and at the same time a detailed reconstruction of the conflict based on careful fieldwork over four years for a doctoral thesis at the University of Amsterdam.

The early 1990s was a time when "reforestation" was still a good thing from any point of view, when the discussion on "forest" environmental services was being pioneered in Costa Rica, when the critique against tree-plantations had not yet really cut ice even within most environmental organizations (Carrere and Lohman 1996). Thus, as I shall explain, the conflict with Stone Container was solved in 1994 but the problem of plantations (which are not true forests) continues. In this case, the species chosen was Gmelina arborea (melina), which started to be planted by Stone in the area around Golfo Dulce in 1989 on rented land, some of it degraded pastures or forest lands, some of it former agricultural land used for rice but cheap to rent because of the policy of discontinuing subsidies for domestic basic grains production (under IMF advice). Stone initially obtained permission to build a dock and a factory to process the trees into chips for export. These industrial facilities would be located at Punta Estrella, in the innermost part of the Golfo Dulce, 30 kilometres from the mouth of this tropical fiord, which has scarce circulation of water. It was foreseen that 180 truckloads per day would reach the factory at Punta Estrella coming from the 24,000 hectares of melina plantations foreseen. Punta Estrella was located in a biological corridor connecting two wilderness reserves at both sides of the Golfo Dulce, the Corcovado Park and the Esquinas or Piedras Blancas Park. At the end, instead of 24,000 hectares of melina in six years, Stone Container has planted some 15,000 hectares over ten years. New threats of tree monoculture come now from oil palm plantations. The permission for the chips factory and dock at Punta Estrella was withheld at the end of 1994. Stone is now exporting roundwood instead of chips, and it has not used the permission it obtained to build the chip factory nearer the mouth of Golfo Dulce, at a place called Golfito where there is already a dock (and a disused railway) from the days of United Fruit's banana plantations between the 1930s to the 1980s.

Stone Container had invested successfully in plantations in Venezuela but it had recent trouble in Honduras. Pamela Wellner, of Rainforest Action Network, had been active in Honduras, and later she was active against Stone's plans in Costa Rica from her new position with Greenpeace. The Rainbow Warrior visited the Golfo Dulce in September 1994. Several European groups (from Germany and Austria) were also mobilized. Letters were written to the authorities, and claims were made in Costa Rica (for instance by Max Koberg, a politician and businessman who was the head of the Stone's subsidiary in Costa Rica) that there was a conspiracy of foreigners against the national interest. Costa Rica is so much involved in global environmental politics that a general diatribe against foreign environmentalists is not useful politically. Maurice Strong had also written a letter to the authorities. There was a difference, it was argued, between good environmentalists and bad, radical environmentalists who were nothing else but recycled communists, "water-melons", red inside and green outside, looking for trouble against American firms now that the Cold War was over. Indeed, some members of AECO had been leaders in left-wing student organizations. Maria del Mar Cordero had taken part in the Sandinista alphabetization campaign in Nicaragua as a teenager.

Outside support was mobilized by the local alliance in Golfo Dulce. This alliance consisted of AECO activists and local people (many of them women, put into action by Maria del Mar) who made a living in small scale fishing, peasant agriculture, and tourist services, all of three sectors endangered by Stone's plans. They constituted a Committee for the Defence of the Natural Resources of the Osa Peninsula. They got also local support from some permanent foreign residents in that beautiful coast. They enlisted the services of some scientists, biologists who were members of AECO, and one high-powered marine biologist from France, Hans Hartmann who in the summer of 1993 surveyed the Golfo Dulce and recommended (without success) that it be declared a "marine national park". Stone also employed some scientists who predictably dismissed so-called non-scientific emotional arguments (van den Hombergh 1999:206) and praised the virtues of reforestation with melina, also discounting threats to the marine environment because of the industrial facilities.

AECO found support in two state agencies, the Contraloría (which supervises State expenditures) and the Defensoría (the Ombudsman, a woman at the time), in the sense that they

wrote reports against the industrial facilities although not against the plantations. AECO encountered a negative reaction in the executive (before Figueres' election in 1994), the Ministry of Natural Resources declared tree plantations equivalent to reforestation, and this was true "sustainable development". A couple of members of parliament supported the opposition to Stone, and they helped to organize very useful local, open fora of discussion in the Golfo Dulce area, where Stone representatives lost the debates. It was the case that the government commission for the technical revision of Environmental Impact Assessment (EIA) was dominated by industry, and it tended to accept too easily the EIAs submitted by Stone. No discussion took place still in Costa Rica at the time on alternative valuation frameworks, whether in terms of extended cost-benefit analysis or multi-criteria evaluation. EIA still looked useful endeavours in principle. Stone also obtained a "green" certificate from the United States, and was trying to get an ISO 14000 accolade. Environmentalists had to learn these new words. In the end, the Figueres' government called for a new commission, including outside experts such as Daniel Janzen, and the solution was reached (a few days before Oscar's and Maria del Mar's deaths) of supporting the plantations while moving the industrial facilities towards the mouth of the Golfo Dulce. AECO took this as a partial victory. In Holmbergh's book there are transcriptions of many interviews with local people, who spontaneously declared that *las plantaciones son monocultivos*. So, a victory was also won on environmental education.

Conclusion

Given the increased export of paper pulp from the South, there are an increasing number of social conflicts against logging and subsequent tree plantations (mainly but not only eucalyptus. One can combine in-depth study of particular conflicts with the comparative information available from international networks (such as the World Rainforest Movement), which have their *raison d'être* precisely in the support they give to such widespread conflicts. Carrere and Lohman (1996) explain that until recently, the bulk of the raw materials for the paper industry were produced in northern countries. Wood and paper pulp production is growing in the world, and moving towards the South, where sometimes the trees grow faster and the land is cheaper (because there is an ample supply of land mainly in Latin America and Africa, and because the people are poorer). There is also, apart from tree plantations, much exploitation of primary or old-growth forests. But old-growth raw material is not enough, there are many new tree plantations. Although only one third of world wood production goes to paper pulp, wood production for paper pulp is increasing faster than wood production for sawn logs. The slogan that sums up the resistance against such trends is "plantations are not forests". Regimented lines of single-species plantations of trees, although often classified as forests in Europe and the United States (following the forest management rule of nineteenth century "scientific forestry": maximum sustainable wood yield), have lost the characteristics of the true forests. The introduction of plantations means that many of the ecological and livelihood functions of the forest are lost, and poor people tend to complain accordingly. There are recent attempts to claim short-run carbon-sink functions for some eucalyptus, pine or acacia plantations (in "joint implementation" or "clean development mechanism" projects). This would make the economics of plantations even more favourable, although some guarantee must be given that the carbon sequestered will not become carbon dioxide too soon. Other functions lost (degradation of the soil, loss of fertility and water retention, loss of grass for pasture) are never included in the profit-and-loss accounts of the paper pulp firms.

Some Mining Conflicts

One leitmotiv of the present text is that consumption drives the economy. Several objections arise to this, however. Are not profits made in production rather than consumption, and is it not the profit-rate the essential driver of capitalism? Are not investments essential as outlets for capital, whether in resource extraction, in the production of capital goods or in consumer goods?

Are not changes of techniques the real drivers of capitalism, and are they not introduced in production, rather than consumption, because of the pressures of competition on profits? Moreover, could not enough consumption to maintain production levels be secured already by the incomes gained in relatively dematerialized activities—a Seattle economy without Boeing?

Interesting but premature questions. The economy is not dematerializing, and because consumption has a life of its own, it is not determined by the necessity to sell production. If the economy is driven by the profit-rate, by investments and technical change, it is *also* driven by conspicuous consumption or by the wish to obtain positional goods, which are more cultural than biological traits. Hence the use of increased incomes in order to buy more and more gold, a habit of the human species in which the East and the West truly meet. Gold mining is similar in a way to shrimp-farming, or to the extraction of tropical wood like mahogany or to exports of ivory and diamonds from Africa.

Gold Mining

Gold is sometimes produced together with other metals such as copper, although gold is often the primary objective. Gold lasts a very long time but the existing stock of gold in the world, counting also the central banks' reserves, does not seem to satisfy humankind's desires, and there is pressure to open new mines, not to substitute for gold which is lost, but to accumulate new stocks. Gold mining is particularly destructive, both when it is small-scale (as the *garimpeiros* in Brazil) or when it is large-scale, by corporations such as Placer Dome, Newmont, Freeport, Rio Tinto or Anglo-American. Gold leaves behind enormous "ecological rucksacks", and also pollution from mercury or cyanide.

The participants at a Peoples' Gold Summit in San Juan Ridge, California, held on 2–8 June 1999, asked for a moratorium on the exploration for gold because commercial gold mining projects are often on indigenous lands. By violating their land rights mining companies are denying the right to life of those indigenous peoples, whose relationship to land is central to their spiritual identity and survival. "We need to support the self-determination of indigenous peoples and the recovery, demarcation and legal recognition of campesinos, tribal and indigenous peoples' lands . . . Large-scale and small-scale, toxic chemical-dependent gold mining damages landscapes, habitats, biodiversity, human health and water resources. Water especially is contaminated by cyanide, acid mine drainage, heavy metals and mercury from gold mining. Additionally, the hydrological cycle is changed and water sources are grossly depleted by pumping water from aquifers". They added: "Life, land, clean water and clean air are more precious than gold. All people depend on nature for life. The right to life is a guaranteed human right. It is, therefore, our responsibility to protect all of nature for present and future generations. Large-scale gold mining violently uproots and destroys the spiritual, cultural, political, social and economic lives of peoples as well as entire ecosystems. Historic and current destruction created by gold mining is greater than any value generated".

La vida es un tesoro y vale más que el oro (life is a treasure, more valuable than gold) was the theme of the First Congress of the Frente de Defensa de los Intereses, la Ecología y el Medio Ambiente, in Cajamarca in August 2001). When words such as "more valuable" are used, the question about which standards of value are being applied arises. From a chrematistic perspective, the value of gold might indeed be higher than the value of the destruction.

In Peru, large conflicts are taking place in Cajamarca (where Atahualpa met Pizarro) between the Yanacocha mine and local communities represented by Federación de Rondas Campesinas. Peasants have been evicted from lands that they sold for a few dollars to the company. They complain that they did not know then what they know now. As families are displaced by the mine and forced into the city of Cajamarca to look for somewhere to live, they find themselves in a situation where they have to pay rent and have no way of making a living. The Yanacocha gold mine is owned by Newmont, and also by a local company, with a 5 per cent share

belonging to the International Finance Corporation of the World Bank. "At the mine, the ore is loosened by daily dynamite blasts, and then piled on to large leach pads to be sprayed twenty-four hours a day with cyanide solution" (Project Underground 2000:13). Sodium cyanide used in gold mines can kill fish and cause other ecological damage. There is pollution of local water sources such as the Llaucano River in Bambamarca. The mine threatens to expand to the Cerro Quilish, which is regarded as a water source for the city of Cajamarca. The cyanide technique has been presented as an alternative to amalgamation with mercury. It consists in spraying a solution of cyanide over crushed ore heaped into open piles. Mercury is also used. In June 2000, a truck from the Yanacocha gold mine spilled mercury in the village of Choropampa. "Residents scooped it up, and dozens were poisoned. The government fined the company around US$ 500,000 and ordered it to clean the area" (*The Economist*, 23 June 2001). In other recent cases in Latin America (in northern Costa Rica against Placer Dome, in Imataca, Venezuela against various Canadian companies), gold mining was successfully stopped at least for the time being. In Venezuela, under the government that preceded President Hugo Chavez, Decree 1850 of 1997 tried to open up the forest reserve area of Imataca of three million ha to gold mining. A movement which comprised the sparse local indigenous Pemon population, some environmental groups such as Amigransa (the friends of the Gran Sabana, led by two women), some anthropologists and sociologists, and some members of Parliament, all using different languages at the service of the same cause (from Indian demonstrations in the streets of Caracas to legal appeals to the Supreme Court), managed for the time being to stop mining in Imataca. The environmental commission of the Chamber of Deputies of Venezuela appealed to the Supreme Court against Decree 1850, quoting a figure between US$ 7,000 and 23,000 per hectare for the restoration of the vegetable cover affected by exploitation, a useful if moderate figure in order to calculate some environmental liabilities that gold mining, with its toxic effects and large ecological rucksacks, implies.[20] Notice here that remediation costs after exploitation is finished are only one part of the environmental liability, the reversible or irreversible damages produced during exploitation must also be taken into account.

One Hundred Years of Pollution in Peru

Work by several authors in the Central Sierra of Peru twenty years ago explained the defence of the communities against expanding haciendas (Mallon 1983). The communities also had to struggle on another related front, against mining companies, and they still do. The Cerro de Pasco Copper Corporation polluted pasture lands in the 1920s and 1930s. Mines were not new to the Peruvian highlands. Huancavelica had supplied mercury to Potosi already in the sixteenth century. Silver had been mined in colonial and postcolonial times. Towards 1900, there was a world boom in copper, lead and zinc mining because of the proliferation of electrical instruments, tools, machines, armaments, and railroads. Domestic capitalist miners (such as Fernandini in the Central Highlands of Peru) were making small fortunes. In 1901 the Peruvian government changed the mining code allowing private property of mining deposits (instead of state property and a regime of administrative concessions) (Dore 2000:13–15). The Cerro de Pasco Corporation from New York bought many of the deposits and started a large-scale underground mining operation. It could rely on the railroad opened to the coast, an engineering feat that had been carried out by Henry Meiggs, theYankee Pizarro. The Cerro de Pasco Company built roads, railroads, dams, hydroelectric plants, mining camps, at 4,000 metres above sea level. It first built several small smelters, and then in 1922 a big smelter and refinery at La Oroya, the effects of which became a *cause celèbre* (Mallon 1983:226–229, 350–351). "The new smelter polluted the region's air, soil and rivers with arsenic, sulphuric acid and iron-zinc residues" (Dore 2000:14). The pastures withered, people became ill. There was a legal case brought against the company by peasant communities, and by old and new hacienda owners up to 120 kilometres away. The mining company was forced by the court to buy the lands it had polluted, as a form of indemnity. When in later years the mining operations and La Oroya smelter became less polluting (at least with respect to the air, because of the scrubbers, if not

[20] *The Economist*, 12 July 1997:30. El Universal (Caracas), 3 August 1997:1–12.

with respect to the rivers), the property of all this land became a valuable asset for the company, which then started a large sheep raising business getting into border conflicts with surrounding communities. In the early 1900s, the Cerro de Pasco Corporation initially had difficulties in recruiting skilled labour. It resorted to the *enganche*, a form of debt peonage. As Elizabeth Dore points out (Dore 2000:15), the large-scale pollution caused by La Oroya smelter contributed to solving the labour shortage, because agricultural yields decreased in the small plots where agriculture is practiced at such altitude, and animals died. Peasant labour became available. This was another blessing in disguise. Today, La Oroya smelter, owned by Doe Run, processes imported materials and produces dangerous lead pollution. Other current mining conflicts in Peru are those between indigenous communities in El Espinar (Cuzco) and BHP-Billiton, and those that arise from the Antamina mine and its slurry pipeline to the harbour of Huarmey.

Mining in Peru was long dominated by the Cerro de Pasco Copper Corporation. Indeed, the new national organization the Coordinadora de Comunidades Afectadas por la Minería (CONACAMI) that co-ordinates communities affected by mining, was born at the end of the 1990s from conflicts between the community of Vicco and new mining companies in Cerro de Pasco. However, in the 1960s the extraction of copper had moved southward, towards Cuajone and Toquepala. These are large open-pit mines near Ilo, an extension of the rich deposits of Chuquicamata and other mines in northern Chile. Copper ores are now obtained by open-cast mining in Southern Peru with enormous amounts of overburden and tailings, and damage to water availability (in regions where it rains little). Moreover, there is the familiar problem of sulphur dioxide from the smelters. The Southern Peru Copper Corporation owned by Asarco and Newmont Gold subjected the city of Ilo in southern Peru, of 60,000 inhabitants in the late 1990s, to water and air pollution for 30 years. The smelter was built in 1969, 15 kilometres north of Ilo. It spewed daily almost 2,000 tons of sulphur dioxide, while tailings and slag were discharged without treatment on land and into the ocean (see Ivonne Yanez 1996). The Southern Peru Copper Corporation is among the 10 top copper producers in the world; it was then Peru's major single exporter. The conflict is more urban than it was in the central Sierra, local NGOs have intervened and also European environmentalists. Two international appeals to courts have been made. The local authorities presented a successful complaint in 1992 to the (unofficial) International Water Tribunal in the Netherlands obtaining its moral support. A class-action suit was initiated at the District Court for the Southern District of Texas, Corpus Christi Division, in 1995 (*New York Times*, 12 December 1995) but is was dismissed after the Peruvian state asked for the case to be brought back to Peru. The plaintiffs, on behalf of people from Ilo, most of them children with respiratory illnesses, complained that the pollution from sulphur dioxide had not appreciably decreased in the last years, despite the construction of a sulphuric acid plant (which recuperates sulphur dioxide). The federal court judge decided on 22 January 1996 against admitting the case into the US judicial system on grounds of *forum non conveniens.*

The Story of Rio Tinto and Other Stories

The old royal mines of Rio Tinto in Spain were bought in 1873 by British and German interests, under Hugh Matheson, first chairman of the Rio Tinto Company. A new railway to the harbour of Huelva was immediately built, which was also kindly made available to local passengers on weekdays (not on local holidays or Queen Victoria's birthday). A very large open-pit mining operation was launched. Eighty years later, in 1954, the mines were sold back to new Spanish owners, the original Rio Tinto Company keeping one-third interest. This British company Rio Tinto (renamed Rio Tinto Zinc) went on to become a worldwide mining and polluting giant (Moody, 1992)—its name, its business origins, its archive in Britain, all point to Andalusia, where a massacre by the Army on 4 February 1888 of local farmers and peasants, and syndicalist miners, was the culmination of years of protests against sulphur dioxide pollution (Avery 1974). The interpretation of this episode in terms of environmentalism became unexpectedly relevant one hundred years later, as the village of Nerva in this region opposed the regional authorities in the 1990s over the siting of a large hazardous waste dump (in a disused mine). Local environmentalists and village officials appealed to the living memory of that "year

of shots" of 1888 (Garcia Rey 1997), fifty years before the Civil War of 1936–1939, when the miners of Rio Tinto were massacred again, this time for non-ecological reasons. Meanwhile, sceptics on the thesis of popular environmentalism point out that, in 1888, the workers were more worried about wages than about pollution, and that the peasants and farmers were manipulated by local politicians who wanted to make money from the Rio Tinto company or who had their own disagreements with other politicians at national level on the treatment given to the British company. "Retrospective" environmentalism related to mining and air pollution is becoming a staple of social history in many countries. Thus, in Peru the "Christmas massacre" of 1934 in San Mateo de Huanchor (when the local community authorities and population were attacked by the military police, after they had destroyed the foundry at Tamboraque owned by Lizandro Proaño that spewed arsenic onto their fields), is nowadays represented in retrospect as one episode of "popular environmentalism" against mining companies (Caceda Vidal 2000).

In the late 1990s, in the region of Intag (Cotacachi, province of Imbabura) in northern Ecuador, Mitsubishi was defeated by a local non-governmental organization, Decoin, with help from Ecuadorian and international groups, in its plans to start mining for copper. I know this case first hand, because of my relation with Accion Ecologica (Quito) which helped Decoin. The idea was to relocate one hundred families to make way for open-cast mining, bringing in thousands of miners in order to extract a large reserve of copper. This is a beautiful and fragile area of cloud forest and agriculture, with a mestizo population. Rio Tinto had already shown interest, but its previous incursions in Ecuador (at Salinas in Bolivar, at Molleturo in Azuay) ended in retreats. A Mitsubishi subsidiary, Bishi Metals, started in the early 1990s some preliminary work in Intag. After many meetings with the authorities, on 12 May 1997, a large gathering of members of affected communities resorted to direct action. Most of the company's goods were inventoried and removed from the area (and later given back to the company), and the remaining equipment was burnt with no damage to persons. The government of Ecuador reacted by bringing a court case for terrorism (a rare event in Ecuador) against two community leaders and the leader of Decoin but the case was dismissed by the courts one year later. Attempts at the time to bring in Codelco to mine (the Chilean national copper company) were also defeated, when Accion Ecologica from Quito sent one activist, Ivonne Ramos, to downtown Santiago to demonstrate with support from Chilean environmentalists on the occasion of a state visit of the president of Ecuador, and she was arrested. The publicity convinced Codelco to withdraw. Accion Ecologica also organized a visit by women belonging to the Intag communities, to copper mining areas in Peru, like Cerro de Pasco, La Oroya and Ilo. The women did their own interviews in those areas, and came back to Intag with their own impressions, carrying miners' music and lyrics that became immediate hits in Intag. These local women still deny to this day that they are environmentalists, or, God forbid, ecofeminists (Observatorio Latinoamericano de Conflictos Ambientales 1999).[21] Today there are several initiatives for alternative forms of development in Intag, one of them being the export of organic coffee to Japan arranged through environmental networks first contacted in the fight against Mitsubishi. But the copper ore is still there, underground, and the world demand for copper keeps increasing at about 1.5 per cent per year.

On the island of Bougainville, the Rio Tinto Zinc company got into trouble because of local opposition despite the agreement the company had made with the government of Papua New Guinea to exploit the site of what is described as the most profitable copper and gold mine in the world. The conflict on the island had perhaps really started two hundred years earlier, when the island was visited by the traveller Bougainville, who gave his name both to the island and to the plant now so common in sunny garden walls. Two hundreds years later, in 1974, it was reported that "the natives of Bougainville have stopped throwing geologists into the sea ever since the company [Rio Tinto Zinc] declared itself willing to compensate them for the land it had taken with cash and other material services". However, it was also reported that monetary compensation was not enough: "The village communities affected gave the highest importance

[21] On the *wayno* music, p. 66.

to land as the source of their material standard of life. Land was also the basis of their feelings of security, and the focus of most of their religious attention. Despite continuing compensation payments and rental fees, local resentment over the taking of the land remains high, and there is strong opposition to any expansion of mining in Bougainville, whether by the existing company, the government, or anyone else" (Mezger 1980:195). Finally, the tiny island of 160,000 inhabitant erupted into a secessionist war at the end of the 1980s. We notice here the use of languages that are well known but were not actually deployed in Andalusia or Ecuador: the language of sacredness, and the language of national independence. We notice also that the language of monetary compensation was brought into play.

Not far from Bougainville, the copper extraction frontier reached Irian Jaya, i.e. West Papua under Indonesia's sovereignty, thirty years ago at a copper and gold mine called Grasberg owned by Freeport McMoRan from New Orleans, a company run by a colourful chief executive officer (CEO), Jim Bob Moffet.[22] Rio Tinto has a stake in this mine. The plans are in 2000 to mine *daily* 300,000 tons of ore, of which 98 per cent would be dumped into the rivers as tailings. The "ecological rucksack" of this operation includes not only the discarded tailings but also the overburden, that is, all the materials removed before reaching the ore. The total copper content to be finally recovered would be nearly 30 million tons of copper, three years of world production, which would come into the market at a rate which would make of Grasberg the supplier of nearly ten per cent of world copper every year. This open cast mine is at high altitude, next to a glacier. The deposit originally formed the core of a 4,100 metre mountain, and the bottom of the open pit now lies at the 3,100 metre level. The current expansion would mean an annual extraction of ore, which would allow an annual output of 900,000 tons of copper, and of 2.75 million ounces of gold.[23] Water pollution in the Ajkwa River has been up to now the major environmental complaint, and acid drainage will be an increasing problem. The ecology of the island is particularly sensitive, and the scale of operations is enormous. In 1977, at the initial stages of operation, some Amungme rebelled, and destroyed the slurry pipeline carrying copper concentrate to the coast. Reprisals by the Indonesian army were terrible. Many complaints against Freeport McMoRan led to an initially unsuccessful class-action suit in New Orleans in April 1996 by Tom Beanal and other members of the Amungme tribe. Tom Beanal declared (at a speech at Loyola University, New Orleans, 23 May 1996): "These companies have taken over and occupied our land. . . . Even the sacred mountains we think of as our mother have been arbitrarily torn up, and they have not felt the least bit guilty . . . Our environment has been ruined, and out forests and rivers polluted by waste . . . We have not been silent. We protest and are angry. But we have been arrested, beaten and put into containers: we have been tortured and even killed". Tom Beanal was reported later to have gotten some money from the company for his own NGO, a classic procedure for conflict resolution, but the legal case made some progress in the Louisiana courts in March 1998 on the issue of whether U.S. courts could have jurisdiction. The best-known representative of the Amungme is now Yosepha Alomang, subjected to detention in horrible conditions in 1994, and who was prevented from leaving the country in 1998 when she wanted to attend a Rio Tinto's shareholders' meeting in London.[24]

Some Freeport's shareholders have been publicly concerned about the liabilities incurred by the company in Indonesia. Henry Kissinger is a director of Freeport. The company was deeply involved with the Suharto regime, giving shares in the company to relatives and associates of the ex-President. Freeport is also the biggest source of tax revenue for Indonesia. Which line will the new Indonesian government take? How will the separatist movement in West Papua (Organisasi Papua Merdeka—OPM) see the plans by Freeport (and Rio Tinto) to expand the extraction of copper and gold ore? The OPM has staged ceremonies raising the Papuan flag in

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22 Documentation on this case comes from the files from the Permanent People's Tribunal on Global Corporations and Human Wrongs organized by the Lelio Basso Foundation at the School of Law, University of Warwick, Coventry, 22–25 March 2000. See also Eyal Press (1995), and Robert Bryce (1996).

23 *Mining Journal* (London), Vol. 329, No. 8448, 26 September 1997.

24 *Survival International* (London), Media Briefing May 1998, "Rio Tinto critic gagged".

the last 30 years, answered violently by the Indonesia Army and by Freeport's security forces (one famous instance took place on Christmas Day of 1994 at Tembagapura, a locality near the Grasberg mine). Will claims for an ecological debt to be paid by Freeport McMoRan be made not through a private class-action suit brought by indigenous tribes but as a result of an Indonesian governmental action, an international replica of a Superfund case in the United States? Attempts to obtain indemnities for externalities caused by TNCs outside their legal country of residence are interesting ingredients in the calculation of the many environmental liabilities that the North owes to the South, the sum of which would amount to a large ecological debt.

Not only have vast quantities of tailings been dropped in the rivers of that region with major environmental damage, also many human right abuses have taken place including forced displacement of people and many killings by the Indonesian military and police, in cooperation with Freeport's own security service. The Indonesian state had an authoritarian regime (or less politely, was a capitalist dictatorship) from the mid-1960s until the end of the 1990s, and the circumstances in West Papua with both a very rich mine and an independence movement, provided reasons for a heavy military presence. It would be a cruel joke to say that a suitable environmental policy would have allowed externalities to be internalized into the price of exported copper and gold. The language of indigenous territorial rights (whose official acceptance would be a novelty in Indonesia), and the stronger language of a separate national Papuan identity (which is historically relevant, since West Papua was annexed by Indonesia after the departure of the Dutch), may be used nowadays after the end of the dictatorship in order to fight the human and environmental disaster caused by the world's largest gold mine and the third largest copper mine.

Conclusion

Some of the mining conflicts analysed are contemporary, some historical. The historical component is crucial to the notion of the Environmentalism of the Poor. Many social conflicts today and in history, have an ecological content, with the poor trying to retain under their control the environmental resources and services they need for livelihood, and which are threatened by state takeover or by the advance of the generalized market system. Actors of such conflicts are sometimes still reluctant to call themselves environmentalists. Though the social groups involved in such conflicts are often quite diverse, the "environmentalism of the poor" is a convenient umbrella term for social concerns and for forms of social action based on a view of the environment as a source of livelihood. In 1991, Hugo Blanco, a former peasant activist in Peru and at the time a Senator, distinguished this kind of environmentalism from its Northern counterpart which could be described as the "cult of wilderness". At first sight, wrote Blanco:

> "environmentalists or conservationists are nice, slightly crazy guys whose main purpose in life is to prevent the disappearance of blue whales and pandas. The common people have more important things to think about, for instance how to get their daily bread. Sometimes they are taken to be not so crazy but rather smart guys who, in the guise of protecting endangered species, have formed so-called NGOs to get juicy amounts of dollars from abroad. . . . Such views are sometimes true. However, there are in Peru a very large number of people who are environmentalists. Of course, if I tell such people, you are ecologists, they might reply, "ecologist your mother" or words to that effect. Let us see, however. Isn't the village of Bambamarca truly environmentalist, which has time and again fought valiantly against the pollution of its water from mining? Are not the town of Ilo and the surrounding villages which are being polluted by the Southern Peru Copper Corporation truly environmentalist? Is not the village of Tambo Grande in Piura environmentalist when it rises like a closed fist and is ready to die in order to prevent strip-mining in its valley? Also, the people of the Mantaro Valley who saw their little sheep die, because of the smoke and waste from the La Oroya smelter. And the population of Amazonia, who are totally

environmentalist, and die defending their forests against depredation. Also the poor people of Lima are environmentalists, when they complain against the pollution of water in the beaches".[25]

In 2001, one of these Peruvian conflicts flared up again. The National Peasant Confederation of Peru issued a declaration on 2 March 2001, under the signature of Hugo Blanco, Washington Mendoza and Wilder Sanchez explaining that there had been a general strike in Tambo Grande (Piura) against the Canadian company Manhattan Minerals. This easily accessible town has about 70,000 inhabitants, with its hinterland. An open-pit mine is planned, literally on top of the town displacing many of its inhabitants. Tambo Grande lies about 75 kilometres from the provincial capital of Piura, about 120 kilometres from the harbour of Paita, in the irrigated valley of San Lorenzo, a success story of World Bank financing in the 1950s and 1960s. The main actors are Manhattan Minerals and the local agrarian population, who use scarce water for export products, some as exotic as mangoes, and also for domestic production of lemons. A young Canadian observer wrote: "Manhattan holds a Supreme Decree from the fallen Fujimori government to exploit the sizeable gold, silver and copper deposit at its Tambogrande concession in Northern Peru. Unfortunately for Manhattan, its El Dorado is located underneath the town of Tambogrande. Local residents do not want to be relocated to make way for the mine. They are also sceptical about the compatibility of an open-pit, heap-leach gold operation with the highly productive agricultural operations in the area. Tambogrande is located in a desert. Its export-quality agriculture, which supports an enormous proportion of the local population, is dependent on an irrigation system that was developed in the 1950s. Concerned about competing uses of scarce water resources and the potential for water contamination, locals perceive there to be much at stake. It's not entirely surprising then, that on 27 and 28 February, between 5,000 and 6,000 locals marched through the streets of Tambogrande, demanding that Manhattan leave. Unfortunately, a small group of the protestors turned violent, setting fire to Manhattan's camp". They even burnt down the six prototype houses for the displaced that were on show. Then, on 31 March 2001, a local farmer, Godofredo García Baca, with an engineering degree from the Agrarian University of La Molina (Lima), a member of the Ecological Forum, president of the Association of Mango Exporters, and leader of the citizens' group against Manhattan Minerals, was shot dead while driving to his farm.[26] One year later, on 2 June 2002, a referendum on the mining project was held in Tambogrande (technically described as a *consulta vecinal*, a consultation to the local inhabitants) organized by the municipality with help from Oxfam America and other NGOs, and a very large majority voted against it.

The Environmentalism of the Poor as an Environmentalism of Livelihood

Starting from the premise that economic growth damages the environment, we have seen ecological distribution conflicts that are not only conflicts of interest but also conflicts of values. Quite often, conflicts over the access to environmental resources and services adopt language that is not explicitly environmental. These are movements born from the resistance (expressed in many different languages) against the lopsided use of environmental resources and services by the rich and powerful. Ordinary women and men strive to correct the wrong that has been done to the land, water and air around them. Until the problem is solved, why pacify the conflict? On the contrary, the publicity given to each of these struggles through their own traditional channels of communication and through the new networks society, inspires others to do battle against the forces spoiling the local and global environments (Cock and Koch 1991:22). The Brundtland report emphasized environmental damages caused by poverty. The contrary view, called the Environmentalism of the Poor, was first proposed in the late 1980s to

[25] Article in the newspaper *La República* (Lima), 6 April 1991.

[26] See CELA Bulletin by Kathleen Cooper, Canadian Environmental Law Association (CELA), Toronto, May 2001, http://www.communityfocus.ca/comm/cela.htm. Also, Robinson (2001); *La Revista Agraria* (2001); *The Economist*, 23 June 2001. I visited Tambogrande with CONACAMI leaders on 15 July 2001.

explain conflicts in which poor people defend the environment (in rural situations, but also in cities) against the state or the market. Well-known instances are the Ogoni, the Ijaw and other groups in the Niger Delta against the damage from oil extraction by Shell. Also, the complaints against eucalyptus in Thailand and elsewhere, because plantations are not forests. Or the movements of oustees from dams as in the Narmada rive in India or in the movement of *atingidos por barragens* in Brazil. Or some new peasant movements such as Via Campesina, against seed multinationals and biopiracy. There are many historical instances such as in Rio Tinto in Andalusia in the 1880s, against sulphur dioxide, and in the early 1900s against pollution of the Watarase river from the Ashio copper mine in Japan. The words ecology and environment were not used politically at the time. Until recently, the actors of such conflicts rarely saw themselves as environmentalists. Their concern is with livelihood.

Livelihood

Economic security refers, in the first instance, to the livelihood or subsistence of humans. While in many past societies material provisioning was secured outside the market, in today's society income earned in the market appears to be the main means of acquisition of the essentials for human livelihood. Market relations, though, have been, and still are, insufficient for economic security. True, the Greek distinction (as in Aristotle's *Politica*) between *oikonomia* (the art of material provisioning of the household) and "chrematistics" (the study of the formation of market prices, in order to make money) seems irrelevant today, because material provisioning appears to be mostly achieved through market exchanges, and there is a fusion of chrematistics with oikonomia. However, many caring activities in families and in society, and many services of nature such as the provision of solar energy and rainwater, remain outside the market. Nature provides resources for the production of commodities and also provides environmental amenities. Nature, more importantly, provides essential life-support services such as the cycling of nutrients, the water cycle, soil formation, climate regulation, conservation and evolution of biodiversity, concentration of minerals, dispersal or assimilation of pollutants, and diverse forms of useful energy. The availability of energy and the cycling of materials allow life forms to become ever more organized and complex. The same applies to the economy. Dissipated energy and waste are produced in the process. At least part of the waste can be recycled or, when not, the economy takes in new resources. However, if the scale of the economy is too large and its speed is too rapid, then the natural cycles cannot produce the resources or absorb or assimilate residues such as, for instance, heavy metals, phosphorous, carbon dioxide or radioactive waste.

Women, Economic Security, and the Environment

Women often become the main agents in such environmental conflicts. Among women in the countryside there is often a deep awareness of the dependence of human society on a clean and bountiful environment. A tribal woman, in the Bastar district of central India, active in a forest protection campaign, put it this way: "What will happen if there are no forests? Bhagwan Mahaprabhu (God) and Dharti Maata (Mother Earth) will leave our side, they will leave us and we will die. It is because the earth exists that we are sitting here and talking". Indeed, some feminists posit a special bond between women and nature, a biological rapport that, in their view, men deny. Other feminist scholars, such as Bina Agarwal, have forcefully argued that the participation of women in environmental movements stems from their closer day-to-day involvement with nature, and from their greater awareness and respect for community cohesion and solidarity (Agarwal 1992). Women, more than men, are inclined also to take the long-term view in sensing, for example, that mining or tree plantations or commercial shrimp farming might bring in some quick cash today but will undermine their economic security tomorrow and the day after. In the division of labour typical of most peasant, tribal and pastoralist households, women and children gather fuel wood, collect water, and harvest edible and medicinal nuts and plants. Women are thus more easily able to perceive, and quickly respond to, the drying-up of springs or the disappearance of forests. More than men, women rely on common property

resources because in many cultures they hold a smaller share of private property. Women's concern with economic security makes them more aware of the value of the environment for livelihood. In cities, women are often at the vanguard of struggles against risks to health.

In industrialized market economies, ecofeminist economists have pointed out that in national income accounting, caring activities are usually not included while destruction of natural resources is often counted as production (Waring 1988). Also not included in national income is environmental and social reproduction. Prices should not be mistaken for value. Even in the most capitalist society, the market economy is a small island surrounded by an ocean of unpaid caring and domestic work and free environmental services that are essential for true economic security.

Ecological and Economic Distribution

During the last twenty years, in ecological economics, human ecology and the new field of industrial ecology, work has been done on "social metabolism", i.e., counting the energy and material input into the economy and counting also the waste products, attempting to characterize societies by different patterns of material and energy throughput. The challenge today is how to link economic security with environmental sustainability. Not all humans have equal entitlements to natural resources and environmental services. For instance, human entitlements to the carbon sinks and reservoirs (i.e. oceans, soils, new vegetation and the atmosphere) are directly proportional to the amount of carbon dioxide each one produces, since the carbon sinks and reservoirs are in a situation of open access. There are other similar "ecological distribution conflicts"—conflicts about the access to environmental services and to natural resources, and about the burdens of pollution. Such ecological distribution conflicts sometimes overlap with economic distribution conflicts. For instance, poor people are sometimes unable in urban situations to get access to sufficient water, and their health and environment suffer as a consequence. An increased income would allow them to buy water in the market. Also, a higher income endowment might allow poor families to "climb up" the cooking fuel ladder towards bottled LPG, with some good environmental consequences (less domestic pollution, less pressure on scarce fuel wood).

At first sight, economic growth seems to improve environmental conditions. Thus, health and environmental damage from sulphur dioxide or lead poisoning have decreased in rich countries, not only because of income growth but also because of social activism and public policies. There is research by Lovins and Weizsäcker showing that rich countries have scope for a decrease in material intensity by "factor 4" or even "factor 10" without a decrease in welfare. However, such optimistic beliefs (the "gospel of eco-efficiency") cannot overcome the realities of increased resource exploitation in environmentally fragile territories, increased South-North physical flows of materials and energy, the increased greenhouse effect, the awareness of past and recent "robbery" of genetic resources, the pressures on surface or underground water often at the expense of human livelihoods and of ecosystems, and many other conflicts Accepting the argument that rich economies have the financial means to correct reversible environmental damage, and the ability to introduce new production technologies favourable to the environment, it might be that such turning points in negative environmental trends arrive when considerable damage has already accumulated or when thresholds have been surpassed. Moreover, technological and social "lock-in" (consumption habits, and patterns of urban settlement), make it difficult to delink economic growth from growth in material and energy flows.

In the debate on the "trickle-down" effects of economic growth optimists believe that economic distribution becomes more equal with economic growth, but commonly, economic growth benefits the poor only in proportion to their initial position. If the lower 20 per cent of the population receives only 5 per cent of income, after a period of economic growth it will still receive 5 per cent, but of a larger total income. Disparities in absolute terms will have increased,

but the level of income of the poor will also have increased. However, income growth does not imply greater economic security because it hides environmental degradation and some other negative social effects. An increased share of marketed goods does not represent increased welfare. For instance, buying water, eating more often outside the home, travelling increased distances to work, expending money to compensate for environmental damage, are part and parcel of the trend toward urbanization. A single metric for the measurement of welfare apart from money incomes is not available. The UN Index of Human Development is an interesting attempt to consider a number of social issues, but it does not take environmental effects into account.

Languages of Valuation

As we have seen in many of the cases considered, environmental conflicts are fought out in different languages. The management and resolution of local or global ecological distribution conflicts would require cooperation between business, international organizations, NGO networks, local groups, governments. Can this cooperation be based on common values and on common languages? We argue that this is not always the case, that whenever there are unresolved ecological conflicts, there is likely to be not only a discrepancy but incommensurability in valuation (Faucheux and O'Connor 1998; Funtowicz and Ravetz 1994; Martinez-Alier, Munda and O'Neill 1998, 1999; Martinez-Alier and O'Connor 1996, 1999; O'Connor and Spash 1999). The conflicts might arise because of the existence of different values but also of different interests. Thus, in the case of mangroves, some people want to preserve them because they appreciate their ecological and aesthetic values. Other people want to preserve them because they live from them, and/or because they understand their practical role as coastal defence and as fish breeding grounds. Other people (or the same people, in other contexts) appeal to the sense of culture and place the mangroves provide for their traditional inhabitants. They might even argue that there are sacred mangroves. In all cases, environmental conflicts are expressed as conflicts on valuation, either inside one single standard of valuation, or across plural values. To see in statements about biomass, energy, culture, livelihood, a lack of understanding or an a priori refusal of the techniques of economic valuation in actual or fictitious markets, indicates a failure to grasp the existence of value pluralism. We may write, "shrimp and gold exports are *valuable* items of world trade", and also, "*valuable* ecosystems and *valuable* local cultures are destroyed by shrimp farming and gold mining". Which is then the true value of one pound of farm-raised shrimp or the true value of a gram of gold? The reduction of all goods and services to actual or fictitious commodities, as in cost-benefit analysis, can be recognized as one perspective among several, legitimate as a point of view and as a reflection of real power structures. Who has then the power to simplify complexity, ruling some points of view out of order?

The "polluter pays principle" sometimes implies that ecological impacts may be compensated by an improving economic distribution. This is not such a new idea, and there are many well-known historical cases. For instance, pollution by the heavy metals produced by the copper mine of Ashio in Japan one hundred years ago damaged not only crops but also human health. The waste water ran off into the Watarase River reducing rice yields of the farmers who irrigated fields with this water. A proto-environmentalist peasant leader, Tanaka Shozo, who became a member of the Diet, led the protests (Strong 1977). Newspapers from 1892 reported that the Fukurawa corporation, owners of the copper mine in Ashio, argued in what we call today cost-benefit language saying that if the copper effluent were responsible for the damage to farmlands on either side of the Watarase, then the public benefits accrued to the country from the Ashio mine far outweighed any losses suffered in the affected areas and that any damage could be adequately taken care of by compensation. In today's parlance, a Pareto improvement means in the strict sense that a change such as a new mining project improves somebody's circumstances, and does not worsen anybody's situation. In this sense, Ashio did not fulfil the criterion. However, a Pareto improvement, in a wider sense, allows for compensation, so that

those better off can (potentially) compensate those worse off, and still achieve a net gain. This was Fukurawa's claim.

The agents of ecological distribution conflicts are not so well identified as the agents of Ricardian or Marxian economic conflicts—landlords and capitalist farmers, in one case, capitalists and proletarians, in the second case. It might be that a fight against effluents is led by a group of naturalists, or by a group of local women, or by a group of indigenous people, demanding compensation, i.e. demanding in the language of economists the "internalization of externalities", or appealing to non-chrematistic values (such as human livelihood or the sacredness of the land). If these or other groups are successful, costs will be different for the firms concerned in every different case; production decisions will also be different.

Externalities (i.e. cost-shifting), whether local or international, must be seen as part and parcel of the economy, which is necessarily open to the entry of resources and to the exit of waste products. As pointed out by O'Connor and Spash (1999), conflicts about access to natural resources or about exposure to environmental burdens and risks, may be expressed:

i. In one single standard of valuation (usually monetary). How should the externalities caused by a firm be valued in money terms, when asking for compensation in a court case? An appeal to economists versed in cost-benefit analysis and contingent valuation is appropriate.
ii. Through a value standard contest or dispute, that is a clash in the standards of value to be applied, as when losses of biodiversity, or in cultural patrimony, or damage to human livelihoods, or infringements on human rights or loss of sacred values, are compared in non-commensurable terms to economic gains from a new dam or from a mining project or from oil extraction. There is a clash in standards of valuation when the languages of environmental justice, or indigenous territorial rights, or environmental security, or sacredness, are deployed against monetary valuation of environmental burdens. Non-compensatory multi-criteria decision aids or participatory methods of conflict resolution are appropriate for this type of situation.

Any social group can simultaneously use different standards of value in support of its economic and environmental security. This is particularly true of subordinate social groups. The claims to environmental resources and services of others, who are differentially empowered and endowed, can be contested by arguing inside a single standard of value or across plural values. Moreover, in complex situations marked by uncertainties and synergies, the disciplinary approach of experts is not appropriate. So, incommensurableness of values arises not only because of different interests but also because of complexity that entails a plurality of legitimate perspectives and values. This point is made vivid by two questions asked in contexts where a narrow economistic assessment misses important considerations. Thus, "what is "the cost of living?" asked Arundhati Roy in the Narmada Valley, and "what is the price of oil?" asked Human Rights Watch in 1999 in a report on the Niger Delta.

Risk, Uncertainty and Environmental Liability

Even today, it is still difficult to get people to agree on the reality of environmental damage, such as loss of biodiversity or the negative consequences of automobile use or the increased greenhouse effect. There is agreement, however, on the danger from the thinning of the ozone layer and from the use of dichlorodiphenyltrichloroethane (DDT), dibromochloropropane (DBCP) and other pesticides, which were for a time believed to be relatively harmless to wildlife and to humans. Similarly, regulatory authorities believed some decades ago that there was no important risk involved in the use of asbestos or lead paint in buildings, or lead in gasoline. Scientific uncertainties and faulty legislation (which puts the burden of proof of damage on the users of the products or on the government regulators, and not on the producers and sellers) are often blamed for the delay in risk perception. However, as Funtowicz and Ravetz point out, the elimination of scientific uncertainty is not a realistic objective.

Are there other reasons for the delay in risk perception? Sometimes, the groups affected by environmental impacts (such as children or future generations) need vicarious representation, which may not be forthcoming. Risks can fall disproportionately on children, as forcefully argued by Wargo (1996) for pesticide residues in food. And "wilderness" organizations intervene on behalf of other species, either because the organizations believe in the species' right to exist, or simply because the organization supports the enjoyment of wildlife by humans. Sometimes, members of the social groups negatively affected or threatened can join together in a collective social protest or in a judicial action, but favourable political and social conditions are required for this. Environmental risks are not randomly spread. They may fall disproportionately on the poor (in application of Lawrence Summers' Principle), or, as argued by the Environmental Justice movement in the United States, on some racial minority groups. Beyond such social factors, risks are not perceived because the effects of new technologies are often unforeseen. There are unexpected consequences which have come or might still come from new technologies (nuclear energy, genetic engineering, synergies among chemical residues, etc.) and which cannot be managed in terms of insurance against probabilistic risks. Hence the importance of the "precautionary principle" as a principle of environmental and economic security.

Ecologically Unequal Trade

Currently, depletion outstrips production in fishing grounds around the world—likewise in many old-growth forests. The demand for exhaustible resources that were produced geologically a long time ago also keeps increasing. Even if it did not, and since some of them are not recyclable (e.g. oil) or are recycled only in a small proportion, then exhaustion at some locations means search and exploitation at new frontiers, with new environmental impacts. The South-to-North flow of raw materials (including energy carriers) is growing in volume (Muradian and Martinez-Alier 2001). When coal was the main industrial energy source, production and consumption were geographically not far apart (in Europe and the United States), now oil and gas travel large distances. Similarly there are increasing flows of iron, copper, and aluminium from South to North. Broadbent (1998) cites a case from Japan where local activists were successful in the 1970s in keeping the company Showa Denko from building an aluminium smelter on Landfill 8 in Oita Prefecturen (a landfill means in this context the enclosure of a portion of the coastal sea, filling it up with rocks, gravel and earth). The activists' success led to a decision by the company to build the smelter in Venezuela, and use the energy from the large Guri dam to run it. This new source of hydroelectric energy was much cheaper than in Japan. Displacement occurs both because of push and pull factors.

The theory of incomplete markets tries to provide explanations of why externalities arise. A substantial part of the recent application of this framework to study trade and environmental issues focuses on the lack of property rights over natural resources and services to explain the reasons for trade not necessarily being welfare improving for the exporting country. This body of literature highlights the need for establishing property rights and negotiations in actual, or at least in fictitious markets, to avoid environmental problems. For example, shrimp farming destroys mangroves—never mind, the theory says, such losses could be given appropriate money values, which would give an exact balance. Another way of analysing this point is that negative environmental externalities derived from the export activity can be introduced in the standard trade theory approach by noting the distinction between private and social marginal cost of production or extraction. However, the applicability of standard economic reasoning necessarily implies aggregating the externalities, at present values, under a unique metric (Cabeza and Martinez-Alier 2001). Many of the negative effects derived from economic activities cannot be thus dealt with. The problem becomes harder if the externalities extend into the future. In that case, the problem is not only to translate the externalities of the present period into a money value but also to translate the externalities for future periods; this requires a discount rate to be chosen and, therefore, an intertemporal distributional pattern of costs and benefits to be chosen.

Standard economic theory points to the need to internalize externalities to bring the costs of extraction and exporting of natural resources closer to the "real" social costs. The social and political limitations on achieving this goal push the analysis outside the neoclassical sphere, towards incommensurability of values (which means the absence of a common unit of measurement across plural values). Ecological economics emphasizes the lack of political and market power of those suffering the externalities. The strength necessary to incorporate negative local externalities in export prices is often lacking in the South. Poverty and powerlessness result in the local environment and health being sold cheaply. This does not indicate a lack of environmental awareness but simply reflects a lack of power to defend both health and environment. As the North has profited from an ecologically unequal trade, it is in a debtor position. The concept of "environmental liabilities" arising from concrete instances of pollution in mining or oil extraction is significant in this respect. It is certainly implied in the Superfund legislation in the United States, which is not applicable internationally. The recent attempts to organize "Fair Trade" networks by means of cooperation of the North with the South stem from a willingness to incorporate certain social and environmental costs in the prices. Those costs are not internalized in the prices that apply in normal production and marketing.

The Carbon Debt

There is then an ecological debt from North to South on account of ecologically unequal exchange, biopiracy, damage from toxic exports, and the disproportionate use of carbon sinks and reservoirs.[27] The concentration of carbon dioxide in the atmosphere has increased to 360 parts per million (ppm). The European Union at the Kyoto meeting in December 1997, decided to allow the concentration to increase to 550 ppm, which would possibly involve a two degree centigrade rise in temperature, with much uncertainty about the temperature range, and even more uncertainty regarding local effects. That this is a "safe" limit has been strongly disputed. In the United States, the emissions per person per year are in the order of 6 tons of carbon, in Europe half of this, in India 0.4 tons. We all breathe in and out more or less the same air, and it would be impracticable to reduce carbon dioxide emissions by slow respiration. As noted by Agarwal and Narain (1991), there are livelihood emissions, and luxury emissions. To use Lotka's idea, one characteristic feature of human ecology is the extreme difference in the exosomatic use of fuels.

The global average of carbon dioxide emission is about one ton of carbon per person per year (i.e. global emission is equal to 6,000 million tons of carbon per year), which is already excessive, and will increase because of population increases and economic growth. Since the Kyoto meeting, the European Union, playing the "leadership game", has proposed a slight reduction in emissions, which the United States finds difficult to accept (partly because of population growth in the United States). In any case the required reduction to avoid a further increase in concentration in the atmosphere, is of the order of half the present emissions; that is some 3,000 million tons of carbon per year. Although the dynamics of carbon absorption in the oceans, new vegetation and soils depends to some extent on the amounts produced, it is not disputed that the use of the atmosphere as an open-access reservoir or "temporary sink" is increasing. The permanent sinks (i.e. oceans, soils, new vegetation) are also used on a first come, first served basis, without payment. When the commitment to reduce emissions is small as at present then, in principle, the price of a ton of carbon in joint implementation or Clean Development Mechanism (CDM) projects will be low because the demand for sinks will be small. However, should the commitment to reduce emissions be in the order of 3,000 million tons of carbon per year, as it should be, then the price would augment enormously. In other words, the stronger and quicker the commitment to reduce, the higher the marginal cost of the reduction. If there is no reduction, this implies the persistent and disproportionate use of the sinks and reservoirs as de facto property of the rich, and therefore a continuous increase year

27 For materials on the Ecological Debt, see www.cosmovisiones.com/EcologicalDebt.

after year in the ecological debt, say, of $US60 billion per year (i.e. 3,000 million tons of carbon which should be reduced at the cost of $US20 per ton). This figure represents the avoided abatement costs. The carbon debt arises because, by not achieving the necessary reduction, the rich countries save themselves a quantity of wealth, which would be roughly of this order of magnitude. One could easily argue then that the appropriate average cost to use sinks should be $US100 per ton or even higher. Notice that the carbon debt is calculated here according to the unpaid abatement cost. An alternative method would be to count the damages that will be done by not reducing emissions, but here we would need to put prices on human lives, on unknown biodiversity and other losses, discounting them (or not) at present values—all of which is controversial. A similar calculation of the unpaid abatement cost was published by Jyoti Parikh, a member of the Intergovernmental Panel on Climate Change (IPCC), who argued that emissions of carbon average about 1 ton per person per year. Industrialized countries produce three fourths of these emissions, instead of the one-fourth that would be proportionate to their population. The difference is 50 per cent of total emissions; some 3,000 million tons. In contemplating the increasing marginal cost of reduction, Parikh calculated that the first 1,000 million tons could be reduced at a cost of, say, $US15 per ton, but then the cost increased exponentially. With an average of $US25 for the remaining 2,000 million tons, a total annual subsidy of $US75 billion is forthcoming from South to North (Parikh 1995).

To sum up, countries that are in a creditor position in the ecological debt could give a sense of urgency to the negotiations on climate change (and also certainly on other issues of international trade, corporate accountability, and Farmers' Rights), by claiming the ecological debt, which is admittedly hard to quantify in money terms. Perhaps the Alliance of Small Island States (AOSIS) will push this point by emphasizing their threatened environmental security.

Proposals for New International Policies

New items for the political agenda often come from outside governmental circles. Some policies are suggested here that would be backed by the networks grown from the sort of local conflicts described in the present chapter. They would not yet be backed by Southern governments and even less by Northern governments, but they are consistent with the environmentalism of the poor and the global movement for environmental justice. Thus, the many conflicts between corporations and local stakeholders in the fossil fuel and mining sector, or regarding tree plantations, give rise to networks that call for corporate accountability. Thus, because of the perception of unequal trade, there is a social movement for "fair trade". This movement has limits (it is active in the coffee trade but not in trade in oil or copper) though it has much potential for raising consumer awareness. Thus, a new agrarian world agenda is being pushed by Via Campesina. Also, opposition to oil extraction in fragile areas as expressed by Oilwatch, links up with complaints against the injustice of current climate change policies.

Two crucial issues for our time are global *environmental governance* and world policies for *poverty reduction*. While progress is being made in Europe on the idea of integrating environmental policies with sectoral policies (whether transport, or agriculture, etc.), in the South (among governments, if not civil society) there is still the view (heard in Stockholm in 1972, Rio de Janeiro 1992, and probably Johannesburg 2002), that the main priority should be poverty reduction through economic growth. The environment is seen as something apart, more a luxury of the rich than a necessity for the poor. There is then urgent need for the global movement for environmental justice to assert itself as actor, both on poverty reduction and on environmental governance. In fact, one may already notice in many Southern countries a difference in the articulation of environmental responsibilities between the governments and civil society groups and people's movements. Many movements in the South have already established the point that environmental protection must go hand in hand with poverty reduction. Since subsistence economies rely on traditional rights to land, water, forests, fisheries and other natural products through common property resources, and a very large population of

the South (particularly women and children) subsist on such rights, any change in their environmental security marginalizes and pauperizes them further.

Sustainability in the North does not depend only on our use of internal land, aquifers, forests, fisheries, and on our own energy efficiency and material intensity, it also depends on whether there is an increasing trend to displace environmental loads to other regions, on the embodied pollution and carbon intensity of our imports and exports, on the environmental liabilities incurred by European firms overseas, on other impacts of our policies on other countries (agricultural exports, fisheries, ecotaxes, CDM experiments), on the technologies we develop and enjoy. For example, physical and monetary trade balances of the European Union by world region show that the significant deficit of the European Union with the South in physical terms is compensated in monetary terms by export prices (per ton) higher than import prices. This imbalance supports the view that there is ecologically unequal exchange. Also, the rich countries make a higher per capita use of carbon sinks and reservoirs than countries in the South (although differences among southern countries themselves are also large in this respect). Because of such environmental injustices at world level, there is no lack of statements asking for a New Environmental Deal between the North and the South. The European Union has repeatedly made declarations in this sense.

In Göteborg 2001, the European Council stated that:

- Sustainable development requires global solutions.
- The EU should promote issues of global environmental governance and ensure that trade and environment policies are mutually supportive.
- The EU should achieve a *global deal* on sustainable development.

In February 2002, the European Commission went further on the external dimension of sustainable development, making a communication to the European Parliament called *Towards a Global Partnership for Sustainable Development*. This document draws attention to the increasingly uneven distribution of income and consumption at a global level, and the fact that many natural resources are already being exploited at or beyond their limits, causing serious damage to the environment. The document points out that the world is faced with a serious "governance gap". It is stressed that governance should be based on widespread participation of stakeholders at all levels. Equally, it is stated that a collective effort is required at a global, national and regional level to provide a framework in which market forces can be harnessed to maintain and increase growth and to create jobs, while preserving the environment and strengthening social cohesion.

Such declarations do not really amount to new policies designed to bring Southern governments (not only the already committed environmentalists) into international environmental governance in a more active role than at present. However, they open perhaps some political space for a thorough revision of policies, as set out below.

Trade. Southern governments sometimes complain with reason against Northern protectionism (on textiles, for instance) despite the rhetoric of free trade, but they also complain with much less reason against "green protectionism" from the North (as in the tuna-dolphin or shrimp-turtle cases). They are wrong to emphasize "green protectionism" because the overwhelming reality is that of ill-paid energy and material flows from South to North. The isolated cases of "green protectionism" are really red herrings, in comparison to the flow of ecologically unequal trade that benefits the North. Environmentally sustainable trade cannot rely solely on harmonization of environmental standards or on internalization of external costs (which anyway is not taking place). It depends to a large extent on the scale of material and energy flows, as well as on the scale of land use. Therefore, new policies based on the following ideas should be forthcoming:

i. The scope and limits of Fair Trade, its roots in consumer awareness of "unfair" trade and debates on declining terms of trade.
ii. The conditions under which "commodity chains" are amenable to "fair trade", e.g. "green" wood imports, "green" coffee, but not "green" copper or oil. For example, farmed shrimp often implies environmental destruction in comparison low input traditional silvo-fisheries.
iii. The scope for international environmental commodity agreements.
iv. Theories of "ecologically unequal exchange" vs. "comparative advantage", vs. "staple theory of growth"—problems of measurement and the policy implications.
v. "Environmental terms of trade", computations of embodied pollution and of carbon intensities of exports/imports.
vi. The links between the (cheap) price of raw materials imports, and recycling policies in rich countries.

Corporate Environmental Accountability. The world economy is certainly not dematerializing in absolute terms. Hence, the increasing environmental conflicts between local stakeholders and local governments or local or transnational companies, in fields such as fossil fuel extraction, mining, tree plantations. The "face" of the North most easily visible in the South is that of Shell, TotalFinaElf, Rio Tinto, BHP, Chrevron-Texaco, Exxon, Repsol. Policies should take into account the need to curtail or redirect the de facto role of business in international environmental governance (for instance, trade-related aspects of intellectual property right (TRIP) rules are sometimes the result of corporate pressure). This would imply the extension of the Eco-Management and Audit Scheme (EMAS) or other systems of environmental accounting or auditing (or certification) to overseas operations, not only relying on voluntary approaches to corporate social responsibility (CRS) in the context of foreign direct investment. Rules for environmental liability should be developed, based on the experience of specific studies of claims of environmental liabilities in court cases (*pasivos ambientales* in Latin America, e.g. Repsol in Neuquén, Argentina, 2002), in order to produce recommendations for international or regional legislation (taking into account European Parliament proposals, OECD guidelines, and the 2001 Green Paper on CRS from the European Commission). The principles of externality valuation take into account irreversibilities, social and economic asymmetries between the actors, and the variety of incommensurable languages of valuation, drawing on the experience of American practice (Comprehensive Environmental Response, Compensation and Liability Act [CERCLA]-Superfund, domestically; ATCA, internationally). Norms not only of domestic, but also overseas application of technological standards (they should be different, in many cases) should be enforced. Environmental liability as a stimulus for technological change should be considered as a strong argument for corporate accountability, to be added to considerations of environmental justice and economic efficiency (which requires the internalization of externalities).

Climate Change Issues. There are several guiding questions for a new North-South Deal to approach. Should the Kyoto Protocol be seen from the South as a first step to combat climate change or as a gigantic "grandfathering" of emission rights? Is the AOSIS one main force for more urgent reductions? Are there other potential allies? The debate on the "carbon debt" to the South (computed as unpaid abatement costs or as present-valued future damage) should be a debate on the distribution of property rights on carbon sinks and reservoirs (and other forms of "burden sharing") which might help to bring some Southern governments into a more active role towards a policy of "contraction, convergence and, in the meantime, compensation". Oil exporting countries are reluctant to take a position favourable to policies against climate change. This dead-lock must be overcome. Energy taxation in the EU damages oil and gas exporting countries (i.e. Algeria, Nigeria, Russia). A new environmental policy is required based on eco-charges on fossil fuel extraction and exports collected in the exporting countries (or by international bodies) as "natural capital depletion taxes" (or *retenciones ambientales* in Latin America), i.e. a fiscal implementation of a rule of "weak sustainability". Such revenues to be recycled (accepting therefore an environmental-social conditionality) towards poverty reduction/alternative energy technologies in the South (with much room for technology

transfer). The main actors here should be the Organization of Petroleum Exporting Countries (OPEC) countries.

A New Agrarian Deal. The globalized economy puts increasing pressure on traditional farmers and forestry communities around the world to move into non-sustainable patterns of ecosystem management, or to give up their activities altogether. Agronomists and anthropologists are now studying the increasing loss of knowledge (and its gender distribution) around the world (together with the disappearance of many languages). New agrarian policies should consider "Farmers' Rights" a much more ambitious instrument than at present, for a policy in support of traditional agroecological production, and against genetic erosion of plants and animal races. Monetary incentives (through "fair" bioprospecting contracts) could be considered but there also needs to be emphasis on local use values of biodiversity in order to preserve knowledge of genetic resources, and the genetic resources themselves. The role of new global pro-peasant movements and networks (Via Campesina, RAFI-ETC) should be supported. They propose an end to agricultural export subsidies, and also protection for small farmers, emphasizing the multifunctionality of agriculture (which is also a EU platform). Payment for environmental services and for the conservation/coevolution of genetic resources could be the chosen instruments with a clear win-win outcome on poverty reduction and environmental quality. However, the proposals from such new stakeholders clash with the agricultural policies from the US and also with the proposals from governments in the Cairns group and with many agricultural lobbies in the EU.

Is there scope for south-to-north technology transfers in agriculture and agroforestry? Can Europe learn from low inputs farming systems in the South? How can the precautionary principle be applied to agricultural innovations such as transgenic crops? The unsustainability of new tree plantations should also be made clear, bearing in mind "plantations are not forests". In conclusion, new international policies in these and many other fields: fisheries, transport, urban development, water use, energy technologies are needed.

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