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“Defending the rivers against development, and other water conflicts”

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DRAFT for discussion

DEFENDING THE RIVERS AGAINST DEVELOPMENT

The coalition Ríos Vivos, from Latin America, the movement of the Atingidos por Barragens, Medha Patkar, were among the liveliest presences at the World Social Forum in Porto Alegre in February 2002, which was the gathering of a network of networks. I did not expect water to be so visible in Porto Alegre. The Via Campesina, yes!, I have been predicting the growth of ecological pro-peasant movements for 20 years. The Tobin Tax people, alas, yes. The big demonstrations against ALCA, yes, indeed. The tribunal against the External Debt, the sessions on Environmental Justice

and the Ecological Debt in which I was involved, I naturally expected them. Water was one main issue, perhaps the dominant issue in Porto Alegre, both the struggles against dams, and the struggles against the “privatization” of water in urban contexts.

Another preliminary point, is there really scarcity of water in coastal areas? Desalinization is profitable for tourists (Lanzarote) even for greenhouse agriculture in Almeria. Lack of water comes more from lack of title to water than from absolute scarcity (at the level of, say, less than 80 litres person day).

Water policy

Nevertheless, confronted with increased demand for water as incomes increase, the traditional water policy pushed by engineers and development economists has been to **increase supply**, hence the building of dams, and also increased exploitation of aquifers (insofar as they have not been already polluted by industrial or agricultural growth). In this paper I discuss some ecological distribution conflicts and the languages of valuation deployed in such conflicts (*nuestros ríos son la vida*, for instance), arising from efforts to increase the supply of water. Hence the title of the paper. In the meantime, however, because of the problems caused by the attempts to increase supply, a new trend has arisen in water policy, **demand management**, pushed by a quarrelling couple, environmental economists and activists. This consists in the introduction of tradeable water rights and more realistic pricing of water through water charges (that will help recycling). For instance, a rural community might have traditional property rights to water for irrigation. The system might be sustainably managed. Privatization and selling the water in the general market system might bring about an unsustainable tragedy of enclosures. Such scenarios are well known. However, the point is that some of the

irrigated land is nowadays not always essential for the local livelihood of people, perhaps it only helps (as in Spain) to produce further agricultural surpluses. Why to take water wholesale to Mallorca for the tourists when Mallorca uses still a lot of its own water in agriculture? In the latter case, not only economists also environmental activists might agree in favour of flexibility of uses and tradeable rights. In general, we must remember that the market is an undemocratic institution where ability to pay is unequally distributed. Tradeable rights might sacrifice rural areas to urban benefit, and perhaps people's livelihood to golf courses.

Increasing the price of water by water charges, might again have a regressive distributional effect, although it will bring benefits in the form of lower consumption of water, and revenue to be spent in cleaning and recycling water. The regressive aspects might be corrected by collecting the charges only on per capita uses exceeding (for domestic use) 50 litres per person/day, or other similar livelihood entitlement.

It is known that the market is myopic not only towards poor people but also towards the distant future, and towards other species not valued chrematistically at present. The market cannot value Nature. The water cycle is moved by free sun energy, the quality of water deteriorates with human use but fortunately it improves again as water is evaporated and falls again as rain or snow. The water cycle cools the atmosphere, it helps substantially to dissipate much heat from sun radiation. All these functions are outside the market, the human economy is embedded in a free beneficial physical system. Humans appropriate or interfere with an increasing share of the water cycle (as Sandra Postel has tried to show, with a methodology inspired in the HANPP calculations by Vitousek et al, 1986). However, using the stock of water (in aquifers, but also mainly in the oceans) as distinct from the flow, is different in meaning from

using the stock of biomass in forests (as distinct from the flow of new photosynthesis). In any case, environmentalists emphasise the multifunctionality of water, beyond its market uses, and call for a logic of eco-systemic management, perhaps helped by market instruments but not with market objectives.

Struggles against dams

Now, two types of conflicts on use of water in rural areas will be described. First, conflicts on dams (McCully, 1996, new edn ...). Second, conflicts on the extraction of ground water for irrigation (with examples from India). The general context is my research on several types of ecological distribution conflicts. Environmental resources can be water, also clean air, or mangrove forests, or genetic resources, or carbon sinks and reservoirs, or sediments carried by a river. The claims to environmental resources of others who are differentially empowered and endowed, can be contested by arguing inside a single standard of valuation or across plural values. Hence the debates on the application of Cost-Benefit analysis to dams.

The global dam building industry is internationally organised. It has been under attack, and it has had to submit to the outside scrutiny in the World Commission on Dams. From the 1930s to today, dams have been built in most rivers in the world. The Amazon still flows freely, though no longer some of its tributaries. The mighty Paraná was dammed at Itaipú (over 10,000 megawatt of installed capacity, at the cost of flooding spectacular landscapes). Yaciretá has also been built (about 3100 MW) leaving behind a large financial debt. In Chile, in 1999, the Pehuenche “strong women against

the Bio-Bio dams”, fought internally and internationally against the Spanish company Endesa.¹

The world movement in favour of the building of large dams was initially based in the United States. The defence of large dams, in terms of the new technique of cost-benefit analysis of multi-purpose river development, spread out from the United States since the 1940s especially via the World Bank. By this peculiar accounting technique, all present and future values obtained or sacrificed by building a dam, are reduced to a money numeraire, and discounted at present-value. Cost-benefit analysis is more recently complemented, in a two-tier process, with the cosmetics of Environmental Impact Assessments (which excludes money values). An integrated economic, ecological, social and cultural assessment is not normally practiced. The World Commission on Dams which encompassed different viewpoints, discussed such decision procedures in its report published in late 2000. In countries with less respect for purported economic rationality and/or for environmental values than the United States, large dams have been promoted nevertheless with similar enthusiasm, from the Soviet Union during many decades after 1920 (with a misguided water policy which led to the Aral Sea disaster), through Nehru’s India, Nasser’s Egypt, Franco’s Spain, the Brazil of the military dictators of the 1970s and 1980s, to Mao’s and post-Mao’s China which today boasts the biggest dam of them all, and the largest number of displaced people: the Three Gorges under construction on the Yangtze. Resistance to large dams is often resistance against the State.

¹ For up-to-date information on such conflicts around the world, see the website of the International Rivers Network.

Only one-fifth of all electricity produced in the world is hydro-electricity, but the environmental and social effects of dam building have been enormous (Hildyard and Goldsmith, 1986, McCully, 1996). In some countries, like the United States, little unused potential is still available, and there is even talk of “decommissioning” some dams in the West of the country in order to restore the natural flow of rivers, recover beautiful landscapes and recreational salmon fisheries.² Decommissioning is also discussed in Third World countries. In Thailand, Thongcharoen Sihatham, a leader of the aptly named Assembly of the Poor, after fighting for years against the Pak Mun Dam, claimed success in June 2000 when the government agreed to keep open the dam’s sluice gates so as to allow the fish to come back to the river.³ In the world at large, the damage from further possible large dams is larger than that already done. Thus, the Sardar Sarovar dam, being built on the Narmada river in central India, shall stand as a showpiece of Indian economic development. This is one of several dams to be built. One other dam would do even more damage in terms of displaced people than the Sardar Sarovar. The potential “oustees” have come together under the banner of the Narmada Bachao Andolan (Save the Narmada Movement), led by a woman in her mid-forties, Medha Patkar. She and her colleagues have fasted outside provincial legislatures, camped outside the Indian Prime Minister’s house in New Delhi, and walked through the Narmada valley to raise awareness of the predicament of the to-be-displaced villagers. (Baviskar, 1995). They also announced their willingness to stay put

² *New York Times*, October 17, 1999, article by Sam Howe Verhovek on the cost-benefit analysis including so-called “existence values” relevant for the proposed breaching of four hydroelectric dams in the Snake River.

³ Vasana Chinvarakorn, *Bangkok Post*, 17 June 2000. I owe this reference to Clemens Grunbuhel.

in the raising water level until being drowned. Every monsoon season, in July and August, as the waters rise, they patiently wait on the banks of the river in their annual satyagraha deciding whether the time has arrived to get drowned in a *jal samahdi*. In the meantime, in August 2001, Medha Patkar and Arundhati Roy (the novelist) were threatened with jail sentences for contempt of court because of the tenor of their comments on the Supreme Court's decisions allowing continuation of work at the dam beyond the 90 metres height, provided there is proof of resettlement of oustees. (*The Hindu*, 3 August 2001).

The early social hopes placed on hydro-electricity (a renewable energy amenable to municipal development, non-polluting when compared to coal) which made of it a favourite technology for some of the first European ecological critics of capitalism such as Patrick Geddes ("paleotechnics" meant coal; "neotechnics" would be hydro-electricity), have been betrayed. Hydro-electricity has been associated to water use for enormous irrigation schemes, or for making water available for sprawling urban growth as in southern California. Thus, water from the Colorado River (where the Hoover Dam is located, which unleashed the big dam era), does no longer reach the delta in Mexico, a potential international ecological distribution conflict were the Mexicans not so meek. Hydro-electricity is also associated in southern countries to the export of aluminium, as in Tucuruí, Guri or Akosombo (in Brazil, Venezuela and Ghana). Tucuruí's electricity is sold at about one cent of a US dollar per kwh to the aluminium smelters - Brazil subsidizes Japan and other importers.

There is a new awareness of the perils from dams (loss of sediments and silt in the deltas, increased local seismicity, salinization of soils in irrigation schemes, loss of fisheries, new illnesses, methane emissions, degradation of water quality, loss of fertile

agricultural land, loss of the riverine biodiversity, loss of cultural monuments, risk of dam failure...). There is also a new awareness of the large number of people displaced by dams, prompted by struggles as that of the Narmada in India, or by the massacre in the Chixoy dam in Guatemala at the time of the civil war. Cost-benefit analysis cannot provide a rational answer either for the commissioning or the decommissioning of dams because the money-values are contingent to the acceptance of a given structure of social and environmental inequality. Thus, the cost of displacing people will depend on their degree of poverty, and also on their degree of resistance should they refuse to accept the distribution of property rights on the environment which the State and the electricity companies defend as being legal. Prices (in actual or fictitious markets) depend on distribution. Moreover, prices are only one type of value. There are other values. Thus, human life has a monetary value in the insurance market, but it has other non-monetary values in other scales. One may say, “where human dignity is affected, economic values do not count”. One may say, as reportedly said one Gujarat politician in 1980s with respect to the Sardar Sarovar, “when the waters rise, the tribals will either drown or they will be flushed out of their holes like rats”.⁴ One may also say, “when an endangered species or an irreplaceable landscape are lost, equivalent compensation is impossible”.

Often, ecological distribution conflicts on dams and water policy pit some regions against others, and different interests and values are brought into play. For instance in Spain, on the use of water from the Ebro river, the conflict on property rights not only on the water but also on the river sediments, has now reached public discussion. As dams have been built in the Ebro basin over the last 80 years, one of the

⁴ Jail Sen, “Effects of the Narmada verdict”, *The Hindu*, 31 July 2001

unaccounted costs has been the lost of sediments reaching the Delta contributing to its subsidence. Ecologists have tried to introduce in the last ten years a new water policy in Spain and elsewhere, whose main plank is eco-systemic river management, away from the development economists' and engineers' approach. Rivers must have at all times a sufficient amount of water, and also periodically large pulsions. This is their required regime. At present, not only most sediments do not reach the Ebro Delta, also massive water transfers from the Ebro towards Barcelona and south-east Spain are foreseen. Monetary compensation for the lost sediments to the inhabitants of the Delta (who are totally immersed in a market economy) would solve in this case the social conflict between upstream and downstream, but it would not solve the problem of delta subsidence, and the consequent ecological losses. A photovoltaic energy revolution which would make hydroelectricity less necessary, and sea-water desalinization cheaper (in economic and environmental terms), would solve both the conflict and the problem.

The Ebro Delta is geographically and also socially to the south of Barcelona. Demonstrations in Barcelona against water transfers from the Ebro in 2001 by groups from the Delta carried banners stating *Lo sud diu prou* – the South says this is enough! More dramatically than in today's Ebro battles in Spain, there are people in Northern countries who have lost their lives in dam failures, or have lost their livelihoods because of dam building. Kate Berry (in Camacho, 1998) gives a moving account of the damage caused to Native American groups by the Pick-Sloan development plan, a massive project which went on from the 1940s to the 1960s in the upper Missouri basin throughout Montana, Wyoming, Nebraska, North Dakota and South Dakota. Not only homes and rich lands were lost, also cemeteries and shrines. Both livelihoods and non-material values were sacrificed in the quest for flood control, and improved navigation.

Similar resistance movements to those against dams exist also against other form of river “development” - for instance, against the Paraguay-Paraná Hidrovia, led by a coalition of environmental groups called Ríos Vivos, itself affiliated to the International Rivers Network. The Hidrovia was meant to facilitate the export of about 20 M tons of soybeans per year, to be produced from Matogrosso, eastern Bolivia, Paraguay and Argentina. The *scale* at which the project was posed had a great influence on the forms of resistance. It was planned as a single waterway of 3000 km. The project was officially assessed by cost-benefit analysis and environmental impact assessment, not by multi-criteria evaluation. Against such evaluation, claims were presented on behalf of the indigenous groups living still at the riverside in some parts of the Hidrovia. Initially the project was publicly explained as a single project, which would possibly affect the water level in the Brazilian Pantanal, a very large wetland of great natural value. It now seems that the project would practically start downstream, little by little, segment by segment, inside national borders along both rivers from Uruguay upwards.⁵

The engineers of the hydroelectric and nuclear age have been among the “modernisers” of the 20th century, totally alien to any of the currents of environmentalism. Sometimes hydroelectric and nuclear engineers worked together, as in the pumped-storage plants, where the water which passes down through turbines in the peak hours, is then pumped back uphill again using cheap night-time nuclear electricity. The enthusiasm for nuclear power in the 1950s and early 1960s should be recalled. The symbol of the Brussels World Exhibition of 1958 was the Atomium, which still stands. It promised cheap energy, atoms for peace, a monument to the

⁵ Taller Ecologista (Rosario), “Los mitos de la Hidrovia”, *Ecología Política*, 16, 1998, pp. 147-9.

misperception of risk. Such technological optimism had a during influence on mainstream resource and environmental economics. The old concern with the intertemporal allocation of exhaustible resources (as in the analytically pioneering work of Gray, 1914, and Hotelling, 1931), and with the sustainable use of renewable resources such as wood or fisheries, was substituted by the concern for the natural amenities because no important environmental costs were associated with the production of commodities such as energy (Krutilla, 1967). Technological change meant that there was no scarcity of resources for the production of a commodity like electricity. However, beautiful landscapes threatened by hydroelectric dams, geomorphological wonders such as the Grand Canyon and Hells Canyon, irreplaceable biological diversity, would be increasingly scarce and increasingly valued. So, Krutilla defended mountain landscapes against hydroelectricity by arguing the electricity would be cheaply available in the future, while landscapes would become more valuable with time. Therefore, Krutilla applied a cost-benefit logic to the conservation of nature. His main assumption, that technical progress was environmentally harmless, was doubtful.

Which values do “riverkeeper” activists involved in local struggles against large dams bring into play? Sometimes, in the North, they bring forward concerns related to “amenity” values, or “deep ecology” values in defence of the sacredness of nature, while in the South human material livelihood is often a supreme value compatible with aesthetic concerns and with respect for other forms of life, and indeed also, sometimes, with an appeal to sacredness. In the North, the opposition to dams has often come from groups of people concerned by the loss of the beauties of nature, or by the loss of pleasures such as rafting down a river. In the South, the opposition also comes, as in the movement by the *atingidos por barragens* in Brazil, from poor people in danger of

losing their livelihood: “An argument often used by dam builders and backers in developing countries... is that concern for the environment is a ‘first world luxury’ which they cannot afford. In fact the opposite is the case” (McCully, 1996: 58). Opposition to dams is then in such cases an instance of the “environmentalism of the poor”.

Underground water in India

There are basically three systems of irrigation in India. First, the traditional tank system in South India. Second, the system based on canals (as in the Punjab, of colonial origin). Third, the system based on underground water, where water is an exhaustible resource. David Hardiman has long studied this last system. Water scarcity in Gujarat provides the rationale for the Narmada dams. His description of well irrigation in Gujarat (Hardiman, 1999) makes clear how matters of life and death are being played out. His explanation of rural water use in India is grounded in the inequalities of caste.

Underground water, which used to be abundant in some regions of Gujarat, was not in open-access. The British changed the structure of property, landowners enjoy the right to draw groundwater from their property with no limit imposed on the amount that may be extracted. The techniques of water extraction, based on energy from oxen, were such that the wells never ran out of water, and even overflowed during the monsoon. However, starting already in the early 20th century and with great impetus in the 1970s because of water demands by “green revolution” crops, deep wells have been dug by the development of tube wells and submersible pumps which use oil or electricity for energy. Private property of the wells and the change in techniques have meant that the water table has been lowered, and water has become more scarce. In order to get water,

farmers must bore wells deeper, and to recoup the investment, they have to get and sell more water. In some coastal regions, the vicious circle is aggravated by the inflow of sea water as the aquifer is depleted. Access to underground water is even more concentrated than access to land, and the upper caste (the Patidars or the Rajputs, depending on the area of study) control the water. Some of it, they sell, but only to some chosen people in the villages. So, the externality of being deprived of water is shifted upon the disadvantaged members of the villages.

A tax on water was discarded already by the British, on the grounds that what was desired was the boring of more wells in order to irrigate more land. The state has discussed a licensing system. The ecological situation is now different from colonial times, but the interests of the upper farmer and peasant castes prevent taxing or licensing water. Alternatives to groundwater exhaustion coming from the grass-roots are difficult because of social oppression. According to Hardiman, in Gujarat some NGO have been successful at playing at inter-caste disputes - the NGO Utthan Mahiti, from Ahmedabad, encouraged Koli women to assert their water rights against dominant Rajputs, being supported by local Patidar politicians, the Rajputs' traditional rivals. Another approach is that of the religious Hindu group, Swadhyaya Parivar, in Gujarat and Maharashtra, with two million members, which emphasizes equality (for Hindus), and collective voluntary manual labour for the replenishment of wells.

Whether water is made available through wells (as we have seen), or through canal irrigation, or even in irrigation tanks in the south of India, water use and water management are determined by caste and gender inequalities. This thesis is supported by David Mosse (1997) who explains that in the areas of Tamil Nadu where tanks provide the main source of irrigation, the precolonial system was reaffirmed by the

British. The tanks are rainfed but they are often linked in larger systems, and therefore a supra-village level of control is often involved. The water “zamindars” continued during the colonial period to treat the tanks as political assets to be gifted, exchanged and redistributed, rather than as market resources for a capitalist-style agriculture. Irrigation from tanks depended on the maintenance of water-channels and distribution by sluice-operators of a dalit caste, who were exploited but also backed by the zamindars, who often distributed water to some groups of people, by giving grants and leases to temples, pilgrim centres, relatives and creditors. With the end of this system of local chiefs and the emergence of the land-owning dominant peasant castes, it is increasingly common for farmers to draw water from the tanks using their own pumps and pipes. In the process, the dalit sluice-operators are circumvented. Farmers thus may abuse the availability of tank-water in a manner similar to those who pump water from their own wells elsewhere. So, the view often encountered of a well-managed, equitable, religiously-based system of tank irrigation in South India, is challenged by Mosse. In fact, people who are poor, mainly the poor women, cannot find satisfaction of their water needs at the local level, whether for subsistence crops or even for domestic needs, they must use the judicial system, or depend on their own direct action with support from NGO. In conclusion, access to water is represented as an egalitarian challenge to the caste system.

Now, however, if caste meant and means in colonial and postcolonial India unequal access to water, and also exhaustion of the resource in some circumstances, a capitalist agriculture does certainly not imply social (or gender) equality, nor conservation of underground water. Sugar cane plantations attempt to get more water in Gujarat and some parts of Maharashtra (as they did in Morelos, México, at the time of

Zapata) depriving poor families of the water they need for livelihood. Women are often at the forefront of the ensuing complaints. Private ownership of underground water, combined with cheap energy, and market objectives, lead to mismanagement.

Languages of Valuation

While river basin development was the original home of cost-benefit analysis (implying that net social benefits could be calculated), and while customary systems of irrigation have been often studied as paradigms of peaceful community resource management, looking at water use from more conflictive perspectives, this paper has shown the variety of actors and languages of valuation involved. The powerful (in terms of international or regional power, in terms of market power, in terms of caste privilege) intensify the use of a resource which is becoming more scarce, or more unequally distributed. The complaints by those on the losing side (socially or geographically) are expressed in diverse idioms of valuation, far from economic reductionism. Ecological distribution conflicts, which are studied by Political Ecology, are not fought only through the demands for monetary compensation established in actual or fictitious market places. They may be fought out in other arenas. When the study of an ecological distribution conflict over the availability or the impounding of water, or over the quality of water, reveals a clash of incommensurable values, then this helps to develop an ecological economics of water that moves beyond the obsession of “taking nature into account” in money terms, and which is able therefore to cope with value pluralism. What is “the cost of living” in the Narmada valley? –asked Arundhati Roy-, in which currency must it be paid? What has been “the price of water” in Cochabamba?

In ecological distribution conflicts, there are many relevant values and interests. There are changes in the property rights, as different groups look for their own advantage . There are definitions of efficiency in the allocation of scarce resources which use only a particular metrics, and leave aside livelihood interests and non-market values (which are not suitably expressed through “willingness to pay”). There are attempts to impose one’s own favourite value-standard. Different actors might fight each other inside such a single standards of valuation, but we must realize that the economic valuation of damages and benefits is only one of the possible languages of valuation which are relevant in practice. Environmentalists defend an eco-systemic approach to the use of water, although at the same time they have come to appreciate the instruments of economic environmental policy. Who has then the power to impose a particular language of valuation? Who has power to determine which is the bottom-line in an environmental discussion? Who has the power to simplify complexity, ruling some points of view as out of order?