

Environmental governance

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THE People's Nature, Health, and Education (PNHE) bill is a bold proposal by Gadgil and Rao (G&R) for restructuring rights and mechanisms of environmental management in India so as to achieve sustainable resource use, conservation of biodiversity and better public health.

Yet, in spite of its nomenclature and legalistic language, the proposal is hardly a 'legislable' bill, since it mixes different levels of change—constitutional, legislative, policy and programmatic — and also transgresses into the legislative domain of states. It appears, instead, to be a manifesto, a vision of an alternative system of governance revolving around five interrelated elements: (a) integration of nature, health, and education through (b) the devolution of most rights and responsibilities to villages/hamlets while (c) retaining some regulatory powers at higher levels of governance, and in particular (d) ensuring biodiversity conservation through a national-level system of (mostly financial) incentives and zoning system, all of which is (e) monitored by local educational institutions

The debate in India on the need for and form of political decentralization began in the colonial period and has gained momentum after Independence. It appeared to have crossed a major watershed after the passing of the 73rd and 74th Constitutional Amendments and the subsequent state-level Panchayat Raj (PR) Acts. However, the amendments and PR acts have only devolved development functions, not provided genuine local self-government (Mukherji, 1993). And there is a shocking lack of attention to environmental issues, not only in the legislation but in the decentralization discourse as a whole.¹

On the other hand, the more recent environmentalist arguments for decentralization have been characterized by either a forest sector focus, such as the push for Joint Forest Management or an alternative forest bill, or by an extreme form of decentralization where everything is controlled by the Grama Sabha (Agarwal and Narain, 1989).² In this context, the PNHE proposal is salient because it calls for greater political decentralization than the PR Acts provide, yet outlines

¹ The material presented here is drawn from a three year research project, funded by the MacArthur Foundation, on 'Ecology, Economics, and Institutions of Forest Use in the Karnataka Western Ghats'

¹ For instance, in the April 1995 special issue of *Kaushalya* journal on Panchayati Raj institutions of managing common property natural resources.
² An exception being Damodaran (1990).

alternative higher-level structures, and has included not only all natural resources but public health and even education in its scope.

Is such broadening of scope useful and necessary? What is the rationale behind strong decentralization? Why then does biodiversity conservation need centralized incentives? Are there any general principles that can be used to determine the desirable extent and form of decentralization in environmental management? These are the questions I shall try to address below, using as my basis G&R's articles in this issue of *Seminar* and in *EPW* (Rao and Gadgil, 1995).

On reading the PNHE bill, one is immediately struck by the fact that the education and health components are hardly developed. Indeed, the authors have done much violence to 'education', reducing it initially to 'know-how' and eventually to 'information'. That our education system needs a complete overhaul is an accepted cliché. That our students would benefit from a greater emphasis on environmental issues, from more interaction with local communities, and from more hands-on activities is also generally accepted.

That our education must complement, not replace, traditional local knowledge is an interesting, though less widely accepted, idea. But the 'E' part of the PNHE bill boils down to just three changes: vesting control of primary, secondary and vocational education with villages, involving students in collecting and computerizing masses of *data* on environmental parameters that have been chosen by experts at the state and national level, and using these data as the learning material for adult literacy programmes. To suggest that these changes will ensure the legitimization of traditional knowledge is facile. To suggest that they will give students sufficient *know-how* to survive in the information age is flippant. And to label it Education with a capital E, which necessarily includes the cultivation of a sense of ethics, civics, and aesthetics, the *know-what*, is downright absurd.

Any overhaul of education must be rooted in a detailed and coherent critique of its role, form, institutions, actors, techniques, and technologies, and environmentalist concerns cannot form the fulcrum of such a critique. Even the limited goal of providing an environmental twist to the educational system cannot be achieved more than superficially unless it is part of such a larger understanding. Failing this, one is liable to fall for the ongoing info-hype, confuse data-processing with thinking, and equate data gathering with education (Roszak, 1986).

A similar sense of inadequacy is apparent in G&R's treatment of Health. To the routine list of responsibilities already assigned to the village health worker today, they mechanically add the involvement of school students, and local health practitioners in *monitoring* the status of 'public health'. The role and structure of the local health centres they describe is hardly radical. Simply attaching ayurvedic doctors to the centres will guarantee an increase in the public salary burden and not in any significant contribution to traditional medicine. Again, it appears that the recommendations are not based upon any comprehensive analysis of the current health crisis in India, particularly of the contribution of environmental factors to it and the institutional changes important to its alleviation.

The overlap between the health and environmental crises is no doubt substantial, indeed more than that described by G&R. 'Environmental' factors play a significant role not only in the propagation (and recent resurgence) of traditional infectious diseases such as plague, malaria, tuberculosis and cholera, but also in the emergence of new diseases such as 'lyme' and 'Ehrlichiosis' (Harvard Working Group on New and Resurgent Diseases, 1995). Moreover, the letting loose of new chemicals and mutagens into the environment is adding another dimension to the problem, whether through oestrogen-mimicking compounds that disrupt the human endocrine cycle (Dibb, 1995) or formaldehyde-based substances that make

bodies hyper-sensitive to allergens. It is also true that this aspect of health has been sorely neglected in modern approaches to health care and research.

Nevertheless, health issues are not entirely 'public' or 'common', the defining characteristics of environmental issues (see below). Many health problems may have largely individual/private origins and private impacts. And the decline of traditional medicine is only partially explained by the decline of local sources of medicinal plants or the over-centralization of state-sponsored health care.

So although building bridges with the radical health reform movement will strengthen the hands of the environmental movement, the health reform agenda cannot be reduced to a decentralization of the existing state-sponsored health care system and the inclusion of a focus on public health/sanitation and traditional medicine in it. Instead of trying (and failing) to incorporate 'Health' into a proposal for reforming environmental management, it would be sufficient to recognize that any meaningful conceptualization of 'environment' must include both the environmental factors directly creating health problems (disease vectors, mutant pathogens, chemical pollutants and their complex pathways) as well as natural resources that might be important in their alleviation (such as traditional medicinal plants). 'Environment' automatically encompasses the 'public' aspects of health, even if 'Nature' does not.

What we have is thus a Nature/Environment bill, or more precisely a significant revision of the current system of governing the natural and not-so-natural environment to achieve a distinctly environmentalist agenda. This is clearly G&R's basic motivation and their strength. Using a combination of ecological and social reasoning, they propose a scheme which, although having a flavour of radical decentralization, is ultimately a new blend of multi-level governance.

G&R start with the premise that environmental processes are highly

complex, spatially variable, and inter-related, and that natural resources or ecosystem services are often common-pool in nature. Hence, environmental sustainability will correspondingly require management that incorporates location-specific knowledge, and is micro in scale, integrated across sectors and collective in its social organization. The success of collective organizations is also related to the smallness and homogeneity of their members. Hence G&R's basic prescription, namely, decentralized ownership and management of most natural resources and ecosystems by 'relatively homogeneous groups of people in regular face to face contact', that is, villages or hamlets.

At the same time, G&R seem to realize that absolute decentralization is not desirable, socially or ecologically. Higher level structures are necessary not only to resolve inter-community disputes or protect weaker sections but also to ensure that the 'larger public interest' is safeguarded in the case of mobile or indivisible resources. The 'right' level for certain decisions like felling of timber is apparently the *taluka*, for setting 'broad social norms' the district or state. However, the 'right' level for *biodiversity conservation* is apparently the nation. Hence the prescription of a national-level system of conservation incentives, overlaid with the existing system of parks and sanctuaries.

While this thrust towards a multi-tiered institutional regime is welcome, its details depend upon the ecological and social imperatives postulated. I shall examine below these two dimensions of institutional re-design, and then discuss the broader political-economic and cultural context in which such re-design must be situated to be successful.

The essential argument here is that institutions must correspond to the ecological characteristics of the phenomena to be managed. What then are the characteristics of natural resources and environmental processes relevant to institutional design? Some of the impor-

tant ones are scale, subtractability, excludability, and renewability.³

Environmental processes operate at a wide range of scales: micro-catchments and river basins, local air-sheds and global circulation patterns, ponds and oceans, gardens and continent-scale forests. Activities affecting these processes must be coordinated at the appropriate scale, else problems arise. For instance, a ground water aquifer will get depleted unless the actions of all its users are coordinated; a deer population will go extinct unless the actions of all of its hunters are coordinated. And in many cases, the effects of actions may be external to the actors, constituting an 'externality'. In these cases, one has to worry about the scale of both the actions and the effects. For instance, an institution for pollution control must cover all the polluters and all the pollutees, either of which may be dispersed or concentrated, local or global.

Excludability (E) and subtractability (S) are particularly important in determining the resource management regime. In the terminology of economics, if a 'good' is such that its consumption by one person does not affect the amount available for another person, it is non-subtractable (or non-rival/non-depletable). And if a limit cannot be easily placed on who shall partake in this consumption, then the good is non-excludable. These two characteristics can be juxtaposed to create a 2x2 matrix of economic goods: privatizable (E & S), communal (S, not E), patentable (E, not S), and public goods (neither E nor S). An example of the last is outdoor air quality: it is difficult or impossible to exclude anyone from enjoying it, and one person's enjoyment (or otherwise) of outdoor air does not affect another person's ability to enjoy it.

Ground water is an example of a communal good, since one person's use reduces its availability to another person, but (within the range of the aquifer) anybody could tap into it.⁴ Most agricultural

3. There is a large, though not necessarily coherent, literature on this aspect (Berkes, 1989; Singh, 1994)

4. Forests are a more complex case. Although felling a tree in one patch does not directly diminish the

or industrial goods are privatizable, as long as one ignores externalities in their production. Whereas poetry is a patentable good in the sense that it does not get 'used up' with repeated reading, but one can in theory exclude somebody from reading it.⁵

This typology is useful because it points to the kind of societal interventions required to ensure that a good is produced at its socially optimal level, at least within the economics paradigm.⁶ In particular, pure public goods can only be provided (or cared for) by the state, whereas communal goods would be optimally produced if the user community were defined clearly and given exclusive access, or rather the ability to control access. On the other hand, for patentable goods to be produced in adequate quantities, the state must provide a clear mechanism establishing some kind of intellectual property right (copyright or patent) that will ensure economic returns to its producer each time it is used.

Renewability did not seem an important characteristic as long as society was using renewable resources, or consuming non-renewables at very low rates. Now, with the rapid extraction of non-renewable resource stocks, this has also become a matter of public concern and hence a case for state intervention. Since the people affected in this case are future generations, the depletion of non-renewables is a pure public good ('bad') only to the extent that one considers the

availability of trees in a neighbouring patch, harvesting generally affects the ecosystem services provided by forests such as pollination, wildlife habitat, soil conservation, hydrological regulation, and carbon sequestration, thus indirectly affecting 'consumers' of these services at regional and global scales.

5. Not that the categories are only indicative, not rigid. Not also how technological change shifts goods from one category to another. Till the invention of the printing press, poetry spread only orally, so the problem of repeated usage without paying royalties was not important. And today, with the invention of photocopying, the system of royalties and copyright on printed poetry is also becoming difficult to implement.

6. That is, where people's interest in pursuing any activity is assumed to be solely determined by the economic returns it provides.

well-being of one's descendants inseparable from that of others'. At what scale decisions about regulating the consumption of non-renewables should be taken is still an open question. In India, the nation state has (or had) arrogated this decision-making power for most non-renewables; but very often this power is used only to set state royalties, not to regulate rates of extraction.

To summarize, individual activities have varying degrees of impact on the 'larger public interest' with the 'public' in the latter also being composed of different, though overlapping, communities. Reaching a societal goal of efficient, equitable, and sustainable management will therefore require that private rights *in all spheres* be diminished and arrogated to these *different* communities to a *differing* extent. Moreover, technological change constantly creates new types of resources and impacts, redefines impacted communities (generally increasing their scale), and produces new possibilities for regulatory mechanisms.

Consequently, the broad distinction of resources into private and common or public is inappropriate. Resource rights must be more finely differentiated into (say) rights to harvest (or to use or pollute public resources in some manner), rights to exclude others from such harvest or use, rights to sell or transfer the resource, and rights to change the fundamental nature of the resource. How these 'strands' of property rights are to be allocated amongst the individual, local community, and higher levels of government is then the issue.

The PNHE bill, however, deals with these matters in a rather haphazard manner. First, most of the prescriptions flow from a narrow land- or biomass-based perspective. Indeed, G&R's very characterization of Indian society as biomass-based reveals that they have missed the most important environmental and economic transitions of modern times: the introduction of fossil-fuel energy, the consequent mechanization, the proliferation of synthetic chemicals, and the increased technological specialization of the economy. To take their own

example, the Indian Institute of Science's biggest contribution to the local economy is not fodder biomass, but rather the extensive consumption of *services* by its campus residents: services of grocers, *dhobis*, servants, cleaners, gardeners, watchmen, artisans, mechanics and so on, that provide employment to literally thousands of people. It is the multi-scale, multi-sector resource use and environmental impact of these transitions that we have to grapple with.

Second, the only property the VNHEC explicitly controls is so-called 'common lands' (and the vegetation, minerals, and rocks on or in it). But, as mentioned above, the distinction between private and public environment is both fuzzy, shifting, and poorly correlated with land-based divisions. Even historically, communities understood the fluidity and layered nature of property rights, and created complex arrangements of access and exclusion. Our ongoing research on forests of the Western Ghats of Karnataka shows the existence and often successful functioning of institutions such as *soppinabetas*, *haadls*, *jamnas*, and *paisaris* that allocate different strands of property right to the individual, community, and larger state. Moreover, starting with the existing boundaries of common lands would only legitimize the encroachments on and transformations in these lands carried out by (in most cases) local elites over the past century.

Third, G&R seem to believe that most of the environmental commons are local in scale, and hence give primary control to villages. They do talk of regional federations within a taluka for managing mobile or indivisible resources like wildlife or ground water. But no mention is made of asymmetric interconnections. That is, externalities resulting from soil erosion, upstream water diversion and air pollution, nor of global commons such as stratospheric ozone and atmospheric greenhouse gases. In the former, the well-being of 'upstream' users/polluters is not tied to the 'proper' (that is, fair) management of the resource. A fairness doctrine has to be imposed politically and culturally. In the latter,

global negotiations have to be carried out by the nation-state, and global commitments must be translated into local actions. In either case, what local rights are to be arrogated by the higher-level body needs to be made clear.

Fourth, an elaborate framework has been presented for conserving biodiversity at a national scale. But both the mechanics and conceptual basis of this framework are questionable. The proposed arrangement, wherein a national expert committee apportions funds to villages in proportion to the 'amount of biodiversity they conserve' (whatever that may mean), and where the demarcation of these areas is left in the hands of 'experts' from the technical cells of (state) and (national-level) committees (Rao and Gadgil, 1995, sec. 44.5, emphasis added), is ultimately technocratic and centralized, not democratic and not even fully market-driven.

Conceptually, biodiversity as an economic good is very difficult to characterize. While the existence value of a forest might be a pure public good, the value there really pertains to wilderness, which can usually be 'marketed' by the state or by local communities. The key benefit of biodiversity being touted today, however, is genetic information. In the economics paradigm, this is a patentable good that only requires the construction of clear intellectual property rights that will ensure adequate commercial returns, not state subsidies. An alternative (non-economic) approach would be to assume that knowledge about the use of biota will be generated and preserved by communities for their *own* interest, not for *commercial* gain. In that case, what is required is abrogation of all individual intellectual property rights, trusting people to keep their own secrets wherever absolutely essential (such as the recipes of many traditional medicines that are known only to individual practitioners). And the nation state would have to resist any extra-national efforts to force the economics paradigm down its throat.

Indeed, there is good reason to believe that 'biodiversity' is being used by

G&R and many others simply as a label (even a front) for a variety of 'goods' with very different characteristics and constituencies: aesthetic value of wildlife habitat, ecosystem services provided by protected areas, current subsistence and commercial value of a large variety of biological products, and potential value of the germplasm. This is apparent in G&R's refusal to abandon the existing system of protected areas (re-labelled safety sites), in spite of their own scathing criticisms about its forest-focus, mega-species orientation, and hence inability to cover the 'entire spectrum of biodiversity' (Gadgil and Rao, 1994).

Precisely for the reasons put forward in Gadgil and Rao (1994), it seems clear that overlaying a protected area zoning on top of a system of incentives is clumsy, unnecessary, and unfair, and betrays a lack of faith in the incentive approach. It would be better to go the whole hog with this approach, ensuring that the different constituencies interested in biodiversity, wilderness, or fundamental rights of non-human living beings are all involved in direct, non-bureaucratic and apolitical negotiations with those who would suffer from restrictions on resource use in such areas.

Finally, the system of environmental monitoring is poorly thought out, being largely driven by the centralized biodiversity conservation system. It is only when decisions are to be taken centrally that one needs to standardize monitoring parameters and pool data across the incredibly diverse national landscape. Else, local communities would determine the parameters and methods according to their perceived needs, capabilities, and priorities. Monitoring would be demand-driven, not legislated. Only pure public 'bads' operating at national scales, such as cyclones and plagues, require nation-scale monitoring.

Here again, cyclones cannot be monitored usefully through local participation but needs a centralized remote-sensing machinery. Epidemics, on the other hand, may require local monitoring and rapid global dissemination of the

results. It is therefore important not to have a single, voluminous, and therefore surely unmanageable national environmental database cluttered with all possible environmental variables, but rather to allow data to be pooled and aggregated at different scales and through different mechanisms as the phenomena and the decision-makers demand.

Studies of collectively managed fisheries, pastures, forests and so on have shown that success depends upon factors internal and external to the institution governing the commons. On the one hand, the institution must be able to exclude external (unregulated) influences on the resource, to regulate internal free-riding, and must be transparent, accountable, participatory, and fair. On the other hand, its success is contingent upon an equal and sustained dependence of individual member's well-being on the resource, and is enhanced when the members are tied to each other with reciprocal relationships in other spheres of life. In this context, G&R's prescriptions of smallness ('face-to-face' contact) and homogeneity of the basic unit, participatory democracy, and quasi-judicial powers at higher levels again turn out to be inadequate and sometimes inconsistent.

To start with, G&R are ambiguous even about the extent of communal control. Village committees supposedly will own all common lands and resources (clause 8.2). Yet, state and national level committees have powers to decide and/or act on 'loss/displacement by development projects'. Doesn't ownership of village lands vest the villagers with at least the power to decide for themselves whether they want to be displaced by so-called 'development' projects for 'the greater good'? Or will the draconian Land Acquisition Acts continue? In my opinion, the larger society should have the right to limit negative externalities caused by local actions, but not the right to uproot local communities in the name of some 'net welfare gain'.

Also, if villagers are the primary regulators of the entire village environment, then logically they should be empowered to control all polluting activity within their

boundary and to seek legal redress for any trans-boundary pollution. Giving the state/national committee 'judicial powers' and 'mandate' (whatever that means) to resolve such problems seems not only unnecessary but also diverges substantially from the principle of separation of judicial and executive powers enshrined in our Constitution. No doubt earlier Indian systems of governance did not envision separation of judiciary either, but such a fundamental shift requires serious and separate discussion. As things stand, the right forum for redress is surely the local courts and the form for higher level bodies is direct election.

At the same time, does 'exclusive' control mean the power to prevent immigration of people from other villages? This would be a legitimate question since people from environmentally mismanaged villages would be tempted to migrate to better managed villages, possibly leading to 'sequential degradation'. However, the ability of people to migrate per se is less likely to lead to such an outcome than the mobility of capital (along and especially without them). Thus, restrictions on capital mobility and alienation of resources (discussed below) would largely obviate this problem.

The rhetoric about 'participatory democracy' notwithstanding, the proposed institutions are actually *participatory in monitoring only*, with decision-making being committee-based and execution being contractor-oriented. While efficient decision-making may require some delegation, the execution of work by either private contractors or government departments is inexplicable. On the one hand, the continued presence of government departments as suggested by the bill seems pointless, given that they will have no decision-making powers. One might as well abolish these departments and ask the committees to initially hire the services of technical advisors and eventually build their own capacity. On the other hand, execution by contract undermines people's involvement and commitment. A greater emphasis on public participation in execution is essential.

If it is coupled with a system of distributing benefits in proportion to such participation, this would also promote equity, since the better off could not simply contribute monetarily and get the benefits.

More generally, the issue of (in) equity within the local communities needs greater attention. While the removal of such inequities should not be a pre-condition for decentralization, the latter must be accompanied by redistributive measures. These measures must go beyond traditional land reform and take into account the new forms of capital and means of surplus extraction that characterize modern (post-biomass) society.

The primary village-level bodies being small and democratically elected may ensure political accountability. Control of natural resources must, however, be accompanied by control of financial resources, and correspondingly, political accountability must be accompanied by financial accountability. The PNHE bill provides for financial control, but not financial accountability, repeating the mistakes of all the Panchayat Raj Acts. Subsidies from above for *specific* activities are all right, but if local communities are to govern responsibly, they must bear the *major* portion of the financial responsibilities. Else, the VNHECS will be what all levels of government are today: mechanisms by which elected representatives dole out patronage while mortgaging our future, because the source of the money is too far removed from where it is spent.

But how will the village-level bodies pay for the long list of public interest activities? The PNHE bill assures them profits from the use of natural resources within their boundaries. This may make the few villages sitting on top of petroleum wells or granite deposits extremely affluent. But most villages must depend upon traditional methods of revenue generation: taxing either economic assets or activities within its boundaries. Taxes on fixed assets (typically land) will surely be inadequate to meet the financial requirements of most rural communities.

But economic activity can only be taxed at a scale beyond which capital and

production cease to be mobile, that is the nation. In the short run then, the centre must be forced to return most of the tax revenues to the local bodies in proportion to their tax contribution (somehow determined), with remaining funds to be used strictly for provision of nation-scale public goods, such as defence, and very little scope for cross-subsidization. In the long run, however, one will have to face up to the problem of capital mobility, which brings us to the broader political economy of environmental (and societal) governance.

G&R's entire proposal is premised on the idea that today's environmental mismanagement is a result of structures of governance that are unable to grasp micro-level ecological complexities nor mobilize people's participation in managing what are mostly local common-pool problems. This analysis of the roots of the environmental crisis is far from complete. Any reform of the structures of governance, however essential, may fail to achieve its goal and possibly be counter-productive if it is not situated in a *comprehensive* critique of the current environmental crisis.

On a simple spatial dimension, comprehensiveness means the inclusion of urban areas, not the perpetuation of the urban-rural dichotomy so 'thoughtlessly constitutionalized' by the 74th Constitutional Amendment (Mukherji, 1993). If villagers need to be the primary managers of their grazing lands, then urban dwellers need to be primary managers of their local greenery, garbage, sewage, and air pollution. Moreover, the rural-urban distinction is not only somewhat arbitrary, but also in a flux, as rural areas get rapidly urbanized. A comprehensive approach to the rural-urban continuum is therefore essential, and it must be based upon the same principles of graduated property rights, community participatory management, and political and financial accountability.

Conceptually, comprehensiveness means understanding the economic, cultural and technological forces militating against decentralized governance in particular, and against the creation of an envi-

ronmentally sustainable, equitable and healthy society in general. The environmental crisis is a product of a complex and interrelated set of factors. Technological change has given human beings the ability to dramatically and often unknowingly modify ecosystem processes. It has also increased the available array of consumption possibilities. This change is partly fuelled by capitalist systems of production that thrive on and hence promote unbridled consumption. Unequal distribution of power within and across villages, regions, and nations enables the powerful to externalize the environmental consequences of this unbridled consumption onto the powerless. Traditional cultural sanctions against profligate consumption are breaking down and cultural mechanisms of redistribution disappearing as the new culture of unlimited technological possibility creates the morally bankrupt ideal of a 'free' individualist consumer.

In this context, society has turned increasingly to the state, the entity primarily responsible for the production of public goods, such as a clean environment. The power of the state to enforce environmental regulation depends on its ability to use standard economic and police powers at its disposal against forces resisting regulation. A pre-condition here is that these forces must not be able to escape such regulation. As labour, goods, and above all capital become more mobile, the ability of lower levels of the state to tax or regulate them declines: octroi becomes a nuisance, people cross state boundaries to avoid sales tax, and companies relocate to areas with weaker environmental controls.

The conventional response has been to arrogate control at correspondingly *larger spatial scales*, leading to greater centralization of power. Even G&R look to national-level bodies to protect villages from 'urban waste, ...commercially exploitative forces (and) unfair trade practices'. The increasingly 'international' nature of new environmental problems (such as ozone-depletion) seems to further reinforce the importance

of the nation-state in environmental problem-solving. Thus, centralization is only partly a cause of environmental mismanagement; it is also in part a (possibly knee-jerk) response to the increasing *global* nature of exploitative forces. And yet, paradoxically, global government is not only a distant dream, but will only magnify manifold the already severe problems of centralized governance being experienced within nation states.

The resolution of this paradox lies in reestablishing greater social control and accountability over capital. This means forcing capital to stay not just within national boundaries, as Herman Daly has been campaigning for (Daly and Cobb, 1989), but in fact within local boundaries. This will mean not only reversing the current trend of globalization and liberalization, but making radical changes in the rules of the game, such as insisting on a local (community) share in any capital-based activity, replacing individual land ownership with community ownership and individual usufruct rights, and perhaps even prohibiting pure money-lending and forcing people to be directly responsible for their investment decisions, as in Islamic law. These changes may have to be accompanied by attempts to reduce the fossil-fuel based mobility of people and goods through carbon taxes, and to replace info-pollution and info-hype through severe restrictions on commercial advertisement through public media. Village republics will work only if villages continue to be real, interactive 'communities', not if the villagers are all plugged into and surfing in some global cyberspace!

Gadgil and Rao have made an important contribution by bringing environment into a hitherto purely political discourse on decentralization, while simultaneously making the environmental discourse confront the complexities of governance. Their basic thrust towards greater local control of resources and livelihoods is unexceptionable, and their attempt to articulate an alternative multi-level system of governance is welcome. But the level of detail and scope

they have striven for is perhaps too much, and it distracts from the basic issues underlying environmentally oriented governance. I have tried to outline a conceptual framework that could help identify these issues and provide a basis for moving towards a more coherent, comprehensive, and sustainable regime for environmental management.

Needless to say, such institutional changes must be embedded in a larger movement for social, cultural and ethical changes. This movement will have to address local inequalities as much as global ones, demand personal changes as much as structural ones, and seek spiritual values as much as economic viability. Its institutions will correspondingly have to embrace consensus-building as much as electoral politics, non-economic incentives as much as economic ones, and livelihoods more than profits.

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