

Environmental Space as a Basis for Enhancing the Legitimacy of Global Governance

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Introduction

In recent years, there has been a resurgence of the discourse on environmental limits. In the early 1970s, international debate about environmental limits was triggered by the publication of the *Limits to Growth* report (Meadows, 1972), and boosted by the first 'oil crisis' in 1973. The debate, often referred to as a discussion between Malthusian pessimists and Cornucopian optimists, continued through much of the 1970s and 1980s (Barney, 1981; Simon and Kahn, 1984). In the late 1980s, the debate receded, in part, because the predicted resource scarcity did not eventuate, or rather, was not reflected in the prices of commodities. It was also because the debate about limits was largely overtaken by the discourse of sustainable development, promulgated most effectively by the *Brundtland Report* (World Commission on Environment and Development, 1987). Inasmuch as the sustainable development discourse refers to environmental limits, these are generally treated in very general and vague terms, and as being surmountable by technological and managerial means (*Ecological Modernisation*), to the extent that economic growth and environmental protection are seen as compatible.

As concern about global warming is reaching unprecedented heights, there is growing recognition of the need to globally define limits to greenhouse gas emissions. Also, continuing growth in demand for natural resources (including oil and other minerals), notably associated with rapid economic development in countries like China and India, has reignited concerns about the continued availability of, and access to, resources (Cohen, 2007; Kerr, 2007; Vidal, 2005). In a number of cases, such as with regard to freshwater, concerns in many parts of the world are aggravated by the combination of these two factors, ecological changes and the rising demand for natural resources (World Water Assessment Programme, 2003).

Against this background, the notion of environmental space has much to offer with regard to the framing of the renewed debate about environmental and resource limits. The 'return of scarcity' can be interpreted in different ways, and used for different ends. There is a real possibility that the discourse on environmental limits will lead to an even harsher, more brutal, more unequal and more undemocratic world. The notion of environmental space offers a basis for a more positive discourse on, and approach to, environmental limits. The aim of this paper is to discuss this potential and explore how the concept of environmental space may help to legitimately enhance and strengthen the global governance of environmental limits in three positive ways: first, by

establishing a framework and methodology for dealing comprehensively with environmental limits; second, by recognising and confirming the principle of (inter- and intra-generational) distributive justice; third, by providing a basis for the design of political-economic arrangements that have the capacity to enhance democracy, from the local to the global level of governance.

First, I will shortly explain the idea of environmental space and associated principles and compare it with related concepts, notably that of ecological footprint. The next three sections then discuss each of the three positive grounds mentioned above. The focus will be foremost on normative arguments, although I will also briefly touch upon some of the issues, challenges and risks associated with the implementation of these ideas. The negative potential of the debate about environmental limits, largely associated with the discourse on security, will be dwelt upon only briefly, as this has been discussed elaborately elsewhere. The paper concludes that, although the discourse on environmental space has much to offer with regard to the governance, at all levels, of environmental limits, the realisation of this potential is far from guaranteed. Much depends on how the discourse on limits is shaped in a political-economic context, and on the relative strength of the agency and social support basis that can and will be mobilised to give consequence to the positive potential of the environmental space concept.

Environmental space

This aim of this section is to explain the concept of environmental space and the main principles on which it is based. As, in several ways, the concept is similar to, and overlaps with, the concepts of carrying capacity and ecological footprint, the main differences are pointed out. The main argument is that the concept of environmental space provides a better basis for addressing, at the policy level, the challenges associated with environmental limits, than the other two principles.

The notion of environmental space was first introduced by Horst Siebert in 1982. It has been defined as “The total space provided by the earth for our use without diminishing the possibilities for the future” (Davidson, 1995), and has been advanced specifically with the aim to ‘make sustainability concrete’ (Buitenkamp, *et al.*, 1993: 17-18; Opschoor and Weterings, 1994). Environmental space analysts set out to determine the total ‘allowable’ resource consumption on a geographical basis (depending on the resource in question), and to provide guidance to

governments about the extent to which resource consumption within their territories should be reduced or can be expanded. It is based on two core principles: respect for ecological limits, and equal access to resources. To these, several other principles have been added, depending on the advocate or author (Carley and Spapens, 1998: 8-9; Moffatt, 1996: 50-52).

The first core principle, the need to respect ecological limits, is based on the idea that there are limits to the capacity of the earth to absorb the pollution and waste associated with resource exploitation and consumption ('throughput' of material). Although it is not possible to determine these limits with absolute precision, and they often only become apparent once they have been transgressed, enough is known to be able to set indicative (and adaptable) targets. Environmental space advocates also concur with the precautionary principle: uncertainty is no excuse for not accepting and setting limits. It should be noted that this argument about limits does not so much refer to the idea that the world is running out of resources, which Carley and Spapens characterise as a 'red herring' (Carley and Spapens, 1998: 85). In most cases, limits are imposed by the 'new scarcity' (ecological limits), not by available reserves, although Hille and others note that, for a range of non-renewable materials, depletion may indeed pose a problem, providing a case for restrictions on consumption on the basis of absolute scarcity (Cohen, 2007; Hille, 1997: 15).

The second principle associated with the notion of environmental space is that all people (those living now and future generations) have equal rights to resource consumption (strong equity principle). Proponents of the concept commonly take the view that the amount of environmental space available should be distributed on an equal *per capita* basis (Buitenkamp, *et al.*, 1993: 18; Carley and Spapens, 1998: 66-74; Sachs, *et al.*, 1998: 14-16). Equity is considered "both a moral and a political necessity" (Carley and Spapens, 1998: 69). If there are limits to resource consumption, they should apply equally to all people. Gross inequalities in resource consumption are likely to provoke or contribute to political conflict.

Based on these two tenets (the existence of limited 'space' and the strong equity principle), for each resource, activity or type of emissions, the total amount of available environmental space can be calculated for any group or geographical unit (region, country or group of countries). For reasons of practice and principle, calculations are based on resource consumption. Rather than setting limits for individual pollutants and waste streams (which are very large in number and varied), the

combined environmental (biophysical) effects (the ‘ecological backpack’ or ‘rucksack’) associated with the exploitation and consumption of specific resources or categories of resources (energy, non-renewable resources, freshwater, wood, and land use, covering about 90 per cent of all material flows) are assessed. As resources are exploited primarily for the benefit of consumption, end-users (collectively, on a national basis) carry foremost responsibility for the “full damaging effect of the ecological backpack” (and thus for reductions if required), not the residents of the exporting countries (Carley and Spapens, 1998: 61, 75-76).¹

Based on what level of ‘throughput’ (with its combined effects) is considered ecologically sustainable, the total amount of resource consumption that can be allowed (within the most appropriate geographical/ecological unit: global, continental, or regional) is determined. This amount is then divided by the number of people living in the relevant geographical unit to determine a *per capita* entitlement to the resource. As, in most cases, nation-states are seen as the most relevant unit to take political responsibility for the level of resource consumption, the total allowable level of resource consumption for nations (based on population size) is calculated. These national entitlements can then be compared to existing levels of consumption. The difference between these figures indicates the amount of over- or under-consumption or use. In the case of over-use/consumption, this can be labelled the ‘sustainability gap’ (the gap between what a country presently uses/consumes and what it should use to remain within the assigned quota). For resources which are considered to be too environmentally damaging or risky (such as chlorine and nuclear power), environmental space is set at zero, implying a phase-out. According to these calculations, most high income countries use and consume resources way above the environmental space that they are entitled to (Carley and Spapens, 1998: 30-47, 75-106).

As noted above, apart from these two core principles, several other principles can also be linked to an environmental space approach. Among these are the ‘quality of life’ principle, the precautionary principle, the proximity principle, the subsidiarity principle, and the principle that non-renewable resources should be exploited in a closed cycle. Carley and Spapens refer to the quality of life

¹ It should be noted that environmental space analysts do use CO₂ emissions as a basis for determining the amount of environmental space associated with energy resources (rather than the resources themselves), because of the “critical nature” of global warming, and because it is “currently the best environmental indicator for fossil-fuel consumption” (Carley and Spapens, 1998: 61)

principle as the third main principle associated with environmental space, implying that resource use must contribute to the quality of life. This is based on the observation that production and consumption of material goods beyond a certain threshold appears to detract from human well-being rather than to enhance it, as borne out by surveys in high consumption countries (especially the USA), and alternative indicators than GDP. Reducing resource consumption in these countries, therefore, does not necessarily imply a reduction of human well-being or happiness. Nonetheless, most people are trapped in the consumption treadmill, and many politicians continue to equate increased consumption with quality of life. Reducing resource consumption, therefore, requires changing value systems and institutions above the level of individuals. The definition of quality of life is left to communities within their own (national) cultures (Carley and Spapens, 1998: 72-74, 134-167). Moffat identifies various other principles mentioned above, but these can be seen as related mainly to the implementation of the two main principles rather than as main principles.

The notion of environmental space is similar to and overlaps in some respects with other concepts that aim to operationalise limits within which human impact should stay to maintain ecological sustainability, notably carrying capacity and ecological footprint. Traditionally, carrying capacity was defined in terms of the size of a population that could be sustained within a particular ecosystem or region. Thus, applied to humans, the concept implies that people should live mostly or even exclusively from the resources available in the region in which they live. This raises some tricky questions (regarding trade, differences in resource endowment between regions, movements of people between regions or even within a country, and other), and can give rise to quite unpalatable arguments (for instance, against providing food aid to starving people in a region). Also, in an increasingly interdependent world, a totally 'bio-regionalist' position seems increasingly unrealistic and untenable, as few people or societies would still aspire, or even be able, to live solely from a regional resource base. More recently, proponents of the concept use it in a global context, applying it to humanity as a whole, which is more realistic (Arrow, *et al.*, 1996) and provides a better link with the environmental space approach. Assessing the ecological limits to resource use is, in large part, a local or regional task that feeds into a global assessment of resource capacity, but does and should not necessarily determine how many people live in a particular place (such as a city).

The notion of 'ecological footprint' has enjoyed growing popularity ever since it was put forward

by Wackernagel and Rees (Wackernagel and Rees, 1996). In some ways, the notions of environmental space and ecological footprint are very similar. Both take a global perspective to sustainability and aim to quantify it. Both provide a means for calculating the environmental impact of any particular group (including countries), and the significant differences in that respect. Users of both concepts raise questions regarding (in-) equity and (re-) distribution. In other respects, however, the concepts are significantly different. First, they rely on different methodologies. The concept of ecological footprint, by aggregating resource use with the help of a single denominator (productive land) is particularly helpful for educational purposes directed at calculating and comparing a population's overall environmental demands. To determine whether a country meets the sustainability criterion (or is 'in deficit' or runs a 'surplus' with regard to its claims on the environment), its total ecological footprint is compared with the total amount of (productive) land within its borders. By contrast, the notion of environmental space uses a range of indicators for different resources, and is not normally expressed in a single or composite indicator (with some exceptions) because doing so is considered methodologically problematic and inappropriate (Hille, 1997).

The methodological differences between the two concepts are important in several respects. First, the different assessments of performance on the sustainability criterion (may) have implications for views on whether existing levels of consumption of a country are justified and remedial and/or compensatory measures are required. Second, the concepts vary in terms of the nature and usefulness with regard to providing policy guidance aimed at advancing sustainability (or reducing unsustainability). Inasmuch as ecological footprint analyses are accompanied by policy recommendations, they tend towards a national ('bio-regionalist') bias: the general aim is to bring a country's resource use in line with its natural capacity and the size of its population. Obviously, this favours large countries with a relatively low population density over small countries with a high population density (even if the ecological footprint *per capita* in the former may be higher than in the latter), and has implications for arguments about distributional justice, as discussed below. Moreover, general ecological footprint analyses appear less fruitful in terms of providing specific policy guidance: whereas environmental space indicators can be used as a basis for formulating specific objectives and targets (which are commonly seen as the very rationale for such analyses), ecological footprint indicators do not and cannot provide specific clues about what can or should be done to advance sustainability (as footprints are a composite measure of a range of different

forms of resource use and environmental impacts, each of which is likely to differ with regard to environmental capacity and to require different policies to advance sustainability).

Given these considerations, from a policy perspective, the notion of environmental space offers a more suitable and appropriate basis for ‘making sustainability concrete’ than the other two concepts referred to above. However, that does not mean that the operationalisation, adoption and implementation of the concept are unproblematic (Bühns, 2004), as will become apparent in the following sections.

Environmental space as a framework for identifying and respecting limits

The aim of this section is to discuss how the environmental space approach interprets environmental limits, and how this interpretation provides a basis for legitimating and more comprehensively addressing (governing) such limits. Although there is growing recognition of the existence of environmental limits also at the global level, this is limited, *ad hoc* and fragmented. The main strength of the environmental space approach is that it provides a cognitive framework and methodology for comprehensively determining limits.

As explained in the previous section, the environmental space approach interprets, in first instance, environmental limits from an ecological perspective. In most cases, resource use must be limited because of ecological constraints, not because of absolute scarcity reasons. Even though many resources will continue to be available and relatively plentiful (such as coal), their exploitation and use needs to be limited for ecological reasons. Ecological limits create a ‘new scarcity’ (Simpson, *et al.*, 2005). Although transgressing ecological limits may be or seem unproblematic to some extent and/or for some time, at some point this will lead to the collapse of ecosystems and the resource basis and ecological services on which humans (and other species) depend.

This insight is, of course, neither new nor exclusive to the environmental space approach. The importance of nature as the source and basis of all life is a common element in the belief systems of most traditional cultures. This is not to say that traditional societies always lived in harmony with nature: they often did not, paying for this with an erosion of their subsistence basis or even their existence (Carter and Dale, 1955; Diamond, 2005). Ignorance was an important factor in this. In

many cases, people did have no way of knowing the extent to which their resource base, which often seemed abundant or unlimited, was vulnerable to their (over-)exploitation. If they survived, it was because they learned from their mistakes, and/or because they were able to import essential resources from elsewhere, or because they moved to a new place.

In spite of the apparently superior knowledge basis of modern societies, ecological ignorance or blindness is still very much a common feature of the cognitive basis on which human decisions and actions affecting the environment occur. Modern economics, for instance, perhaps even more than pre-modern societies, is blind to the natural/physical basis of production capacity and the effects of production and consumption on that capacity, unless these effects lead to monetary transactions. As noted by Daly (Daly, 1996), a fundamental problem with the *pre-analytic* vision of dominant economic theory is that it treats the environment as an unlimited source of inputs and sink for outputs (waste). It assumes that there are no bio-physical limits to economic growth (and to the amount of 'throughput' of energy and material that ecosystems can sustain). In fact, the system creates perverse incentives and benefits from environmental degradation. For instance, as a resource (such as oil or a fishery) gets scarcer, and its price goes up, this creates an incentive (prospects for higher profits) for intensifying exploitation. Pollution and environmental degradation create new markets (for pollution control equipment, bottled water, desalination plants). Often, such 'solutions' or 'alternatives' create, in their turn, new or additional environmental problems (more waste, increased energy use, pollution shifted to other areas or media).

In the 'real world', there is a tendency to recognise environmental limits on a 'one-by-one' basis, only after it has become apparent that a particular limit has been transgressed. This *ad hoc* and reactive approach has been a common feature in the development of environmental policy within countries, but also at the international level, as exemplified by the development, over time, of different regimes to address the depletion of the ozone layer, the decline of biodiversity, and greenhouse gas emissions. At the national level, the limitation of such an approach, which often leads to the shifting of problems rather than their resolution, has long become apparent, and given rise to efforts, be it with various levels of commitment and success, to the development of more comprehensive and integrated environmental policy.

With economic globalisation, based on the *pre-analytic* vision described above, and the growing dependence of countries on external resources (Simms, *et al.*, 2006), maintaining the ecological and resource basis for human life has become a global challenge. This, arguably, is the most important point made by the *Limits to Growth* report and its sequels, even if there is scope for debate about whether and when particular resources will be depleted. The growing demand for resources, no matter from where, inevitably has repercussions on their availability (and at what price) elsewhere. Although control over most resources resides with governments and businesses, questions about their (long-term) availability and quality, as well as distribution and allocation are, ultimately, of global concern. To resolve these issues effectively, they need to be addressed at the global level, however difficult this may be.

The environmental space approach, which takes a comprehensive and global look at resource availability and absorptive capacity, can be used to identify limits and to specify objectives and targets across a wide range of resources and issues. Based on an assessment of ecological capacity from the global to the local level, and in some cases of absolute scarcity, overall limits for resource consumption, covering most resources, can be determined. Such an approach, if implemented, would avoid a shifting of environmental pressures that could result from imposing limits in some areas or respects, geographically and/or with regard to a particular resource. For instance, it would avoid increasing pressure on land (including forests and biodiversity) and water for the sake of growing crops for the production of biofuels, a consequence of the narrow focus on limits associated with energy resources, one of the more recent examples of the tendency to shift environmental problems.

Of course, determining a global framework for the overall amount of environmental space is a daunting task, let alone assigning 'entitlements' to countries, as has already become apparent in the climate change issue. It assumes that agreement can be reached, at the global as well as regional and national levels, on the nature and level of the resource limits that are required, and that governments are willing and able to accept limits or quota. There is, of course, plenty of uncertainty and scope for disagreement on the need for, and level of, limits. Political-economic imperatives and interests undoubtedly combat against accepting limits. I do not deny the formidable obstacles that exist. The argument here is that, if the world is to prevent a global collapse of ecosystems, and thereby the basis for human well-being or even existence, it will have

to come to grips with the challenge to determine and (self-) impose limits at all levels of governance in a comprehensive and systematic way. The environmental space approach provides a basis for legitimating and strengthening global governance by supporting the need for setting limits, and by advancing a cognitive framework and methodology for determining limits. It does not, by itself, address (or even identify) the obstacles to adopting such an approach.

Moreover, this is not to say that it is the *only* way that can be used to determine limits, or that the approach has no shortcomings and limitations. For one, the methodological issues associated with the interpretation, operationalisation and analysis of environmental space should not be underestimated (De Jonge, *et al.*, 2001; Hanley, *et al.*, 1999; Moffatt, 1996; Musters, *et al.*, 1994). Linking and aggregating environmental effects with resource exploitation and consumption is not just information hungry, but also requires making all kinds of assumptions in the face of uncertainty. Significant questions arise also about the issue of scale to which the concept is applied, which has not been consistent throughout environmental space analyses. Also, using *per capita* consumption as an indicator for equity hides potentially large differences in resource consumption within countries. Furthermore, environmental space analyses are unclear or confused with regard to the allocation of responsibilities: on the one hand, responsibility is assigned to ‘end-users’ who benefit from resource consumption (implying a need for reducing consumption and value change); on the other, companies are most *directly* responsible for the environmental impacts of exploitation, production and transport of resources, be it influenced by competition, governments and international regulation.

Perhaps one of the most important issues to emphasise is that the assessment and determination of environmental space is not just or even foremost a matter for science and scientists. Although some environmental space analysts advocate a strict separation between the determination of environmental space (on a scientific basis) and politics (De Jonge, *et al.*, 2001: 55), most take the view that determining limits is a values-based activity. Assessing limits inevitably involves making judgements, for instance, on the nature of the limits (which aspects of ecosystems, or resources, to include?), and on the essential level of ‘space’ that must be maintained. This is not an argument against using the notion of environmental space, or against determining quantitative limits. The main point to be made here is that, for the idea of ‘concrete’ environmental and resource limits (environmental space) to be adopted at the global level, a raft of scientific, methodological and

political issues need to be addressed and resolved. Perhaps, even though the assessment and calculation of environmental space is not just a matter for science and scientists, the creation of International Panels for sub-areas of environmental space, for instance, one for renewable or living resources (Land use, water, forests, biodiversity) and one for non-renewable resources (minerals), similar to the IPCC, could be a starting point for working towards improved knowledge and understanding of, and greater consensus on, the issues.

Ultimately, the protection of the earth's carrying capacity is an ethical and moral issue of fundamental (existential) importance. A case could be made for enshrining the protection of environmental space in international law as a fundamental obligation on the part of all mankind, including governments and businesses. In negative terms, causing (deliberately) the erosion of environmental space could be defined as the ultimate crime against humanity (assuming non-human nature will continue, or even flourish, without humans).

In conclusion, although there is growing recognition of the need to determine environmental limits at the global level, thus far, this has been confined to relatively few issues, approached on an *ad hoc* and fragmented basis. To address environmental limits more effectively, a more comprehensive approach is required, also at the global level. The environmental space approach provides a cognitive framework and methodology for this, be it not without issues, limitations and shortcomings. However, the most significant obstacles to the adoption of the concept of environmental space (and the recognition of environmental limits in general) are not methodological but political. In that context, the issue of equity plays a crucial role.

The equitable distribution of environmental space

This section elaborates on the second main tenet of the environmental space approach, the view that environmental space is to be distributed equitably, for ethical and political reasons. The case for an equitable distribution of environmental space at the global level is not uncontested, but stronger if looked at from a historical perspective. Moreover, it is unlikely that any global agreement on environmental limits can be achieved and implemented without accepting an equitable distribution of environmental space.

Shrinking environmental space can be conceived as a threat to the well-being and even survival of humankind and other species. The ‘environmental space approach’ outlined above is based on the principle that the space that is (remains) available should be shared equitably or even equally between all members of humankind. For instance, when it comes to the distribution of rights to emit greenhouse gases, environmental space advocates take the view that, in principle, all people on earth (should) have the right to the same *per capita* level of emissions. Inasmuch as the existing *per capita* emissions of low income countries are lower than the global *per capita* average, people in those countries have the right to increase their emissions, even more so if ‘historical emissions’, for which the now rich countries are mostly responsible (the ‘contribution to the problem’ argument) are taken into account (World Resources Institute, 2001).

This argument can be backed up further by the fact that emissions are associated with economic development and standard of living. Countries that have thus far not been able to develop economically (for whatever reasons), it can be argued, should now get the chance to do so without limits on their emissions as long as these have not reached the levels (arguably including historical emissions) produced by the already rich countries (the ‘right to development’ argument). Moreover, as poor countries are likely to be most adversely affected by climate change, and as rich countries have a greater (financial) capacity to pay for measures of mitigation or adaptation, it seems fair to put much of the responsibility for reducing emissions on the rich countries (the ‘ability to pay’ argument).

However, the adoption of this principle, and even more so its implementation, is highly problematic. Philosophically and ideologically, dominant thinking does not provide much support for the idea that people in the world have equal ‘material’ or positive rights, the kind that is implied in the sharing of environmental space. Traditionally, concerns about inequality and justice have been discussed mainly in the context of defined political-geographical units. Some authors take the view that there is no case for international distributive justice as people in the world are not collectively bound by contract (Rawls, 1999; Tasioulas, 2005). Only citizens belonging to the same society or political system may determine, and can be bound, to principles for distributive justice.

That all people (should) have an equal right to the material conditions for their existence or well-being, or the fruits of the use of environmental and natural resources, is not an idea shared by

many contemporary thinkers. Dominant (neo-) liberal philosophy emphasises the rights of individuals but seems to take for granted the existence of material inequalities, whether endowed by nature or created and sustained by human processes and institutions. If material inequality is problematised, it is largely because of (potentially) undesirable consequences or ‘side-effects’, not because of a view that inequality is inherently objectionable. As Beitz notes, “it would be naïve to complain about global inequalities on simple inegalitarian grounds” (Beitz, 2001: 97). Inasmuch as rich countries are concerned about equity issues associated with sustainable development, they tend to focus on *inter-generational* equity (future generations) rather than on *intra-generational* equity (Redclift and Sage, 1999).

Congruent with this is the shift in focus in international discourse from inequality to (extreme) poverty, furthering the idea that inequality *per se* is not really a problem. More generally, inequality is simply seen as a matter of fact, or even as a “positive, restraining, and ordering force” (Woods, 1999: 10). Reducing poverty, from this point of view, depends foremost on the good will of the rich, and is not a moral or political obligation. It may involve writing off debt, improving aid and providing better market access to exporters from low income countries (boosting economic development), but is not generally thought of as requiring more fundamental political-economic change.

Environmental space advocates are not totally on their own in views on global equity. Although their arguments can be challenged on the basis of ethical reasoning, the objections are not necessarily fatal or fundamentally flawed (Page, 2006). Their views align well with those thinkers who are often referred to as cosmopolitans, who do proclaim principles for international distributive justice (Beitz, 1999; Caney, 2001; Pogge, 2001). However, it is not uncommon for such views to be dismissed as unrealistic and idealistic. Dominant political-economic thinking is not based on equity principles, but on a blend of national and capitalist interests that promotes competition over, rather than a sharing of, environmental space.

Much of the debate about poverty, however, and about whether the rich have moral obligations towards the poor, ignores the political-historical sources and aspects of poverty and inequality. Philosophers, when addressing these issues, focus on general moral principles and tend to ignore historical and political-economic relations. Yet, taking the dominant views on poverty and

inequality for granted, and not questioning or even noticing the political-economic and ideological basis for this dominance, is arguably even more 'naïve' than explicitly defending an egalitarian stance unless, of course, this is deliberate. Indeed, the demise of egalitarian thinking, and its relegation to the utopian realm, is better interpreted as the result of deliberate ideological efforts accompanying and in support of hegemonic political-economic forces. Whether or not people have a right to more or less environmental space is a question that should not be approached only on the basis of general principles but be seen against the background of the sources or causes of inequality. In reality, control over and access to resources has never been determined solely or even mainly by principles, but by social and political forces and processes. To understand the situation in which countries, societies, peoples, and individuals find themselves in with regard to their consumption of and access to resources we need to look at geography, history and political-economic relations.

In theory, it is possible that differences in resource consumption are related to differences in resource endowment between regions. Arguably, this was the case at the time when human communities were largely self-sufficient and did not rely (much) on trade or conquest to add to their level of consumption. These days, however, differences in resource endowment appear to have little to do with the variations in resource consumption between regions or countries. In fact, many countries well endowed with natural resources, such as many sub-Saharan African countries, are among the poorest and are, *per capita*, low resource consumers, whereas some of the richest countries are relatively poorly endowed, such as Japan and the Netherlands, but high *per capita* consumers. Obviously, other factors than resource endowment *per se* are responsible for a country's level of resource consumption.

One class of explanations emphasises factors inherent to countries themselves: socio-cultural institutions (beliefs, norms; absence or presence of an entrepreneurial spirit), political-institutional factors (instability, corruption; legal frameworks conducive to development), and even climate have been invoked to explain why rich ('developed') countries have become 'developed' and others have been left behind (Pye and Verba, 1965; Rostow, 1960; Sachs and Kozak, 1967). More recently, many of these factors have been encapsulated in the concept of 'capacity', leading to the idea that 'development' is mainly a question of 'capacity building' (Dessart, *et al.*, 2001; Organisation for Economic Co-operation and Development, 1994; World Bank, 1991). These ideas have become

internationally prevalent and provide the basis and justification for *increasing* the flow of resources from resource rich, but financially poor, countries, among other through foreign investment and trade. From this perspective, differences in resource consumption do not provide a justification for global governance other than that it should assist in making ‘under-developed’ countries safe for and receptive to foreign capital investment (Redclift and Sage, 1999).

Another class of explanations emphasises the importance of the history and nature of interactions and relations *between* countries in explaining their level of economic development. Countries have become rich or poor not because of the level of their resource endowment, but because of the unequal power relationships among them, enabling some countries to dominate over others. Although environmental and technological advances, notably in military technology, provided a basis for the dominance of European powers (Cipolla, 1965; Diamond, 1998), economic inequality has been cemented and increased over centuries by plunder and ‘unequal exchange’, right until the present (Bond, 2006). Arguably, being resource rich has been a magnet for attracting the interest of foreign powers and capital, and the development of ‘under-development’ (Rodney, 1982). This has given rise the idea that being resource rich is a curse rather than a blessing (Ross, 1999). The exploitation of the resource stocks of many low income countries serves and entrenches the accumulation of capital and the technological-economic advantage of the already rich countries, and does little or nothing to close the gap between rich and poor countries. Whilst some low income countries appear successful in terms of (rapid) economic growth, the division of labour between high and low value added economic activities remains largely intact, increasing rather than diminishing income inequality between countries (Wade, 2003: 38). In the process, many people in low income countries pay a heavy price in the form of environmental and social degradation that is not accounted for in economic statistics. At the same time, domestic income inequality has increased sharply and the longer term prospects for economic development is undermined by the erosion and depletion of the resource base in these countries.

Whether ‘under-development’ is regarded as the result of unfavourable or ‘unfortunate’ conditions in poor countries or attributed to exploitative relationships is likely to have implications for one’s views on equity and justice. Although some liberal philosophers admit that (neo-) colonialism may have something to do with the economic and social disparities in the world (Wissenburg, 2006), many tend to focus on the issue of inter-general justice, often associated with the notion of

sustainable development (the needs/rights of future generations) (Redclift and Sage, 1999).

By contrast, those who attribute much or most of the existing inequalities in conditions and life chances to (neo-) colonialism and exploitative relationships inherent to capitalism, see the issue of equity not so much in terms of (possible) moral obligations on the part of the rich towards the poor, but as a right of those who have been exploited to redress injustice and to seek structural political-economic change. As Wissenburg notes, to the extent that inequity can be attributed to (neo-) colonialism, it is an issue of *retributive* rather than *distributive* justice (Wissenburg, 2006). However, as long as political-economic relationships continue to be a source of (growing) inequality, distributive justice requires more than financial compensation for past injustice, and arguably a right to a part of the surplus created from the use of (under-priced) resources and labour. As Hornborg notes, the exploitative nature of these relationships has been “made invisible by the vocabulary and ideology of the market. This unequal exchange of resources can be made visible only by identifying, beneath the flows of monetary exchange value, measures of real resources such as energy, labour time, and hectares of productive land” (Hornborg, 2003: 215).

The environmental space approach provides a basis for making visible the extent to which the distribution of wealth and income, at the national and global level, is based on the consumption of natural resources, now and in the past. Historically, and still up to the present day, the rich countries consume most of the world’s resources, and are responsible for most of the (accumulated) pollution associated with their exploitation, production and transport (Carley and Spapens, 1998: 41-44; World Resources Institute, 1994: Chapter 1; 2005). If resources are becoming scarcer, and/or the space for using them within ecologically deemed acceptable limits shrinks, there is a strong case for arguing that ‘environmental justice’ requires that the remaining available space be evenly distributed on a *per capita* basis, or even that more is given to those who have not used, or been able to use, this space in the past.

Inasmuch as income and wealth in a country are based on a disproportionate consumption of resources that can be exploited without compromising ecological sustainability, and the costs and benefits of such resource use are unevenly distributed across nations, a case can be made for addressing this as an international or global environmental justice issue. However, how a more equal right to environmental space (including natural resources) can or should be translated into

practical terms, institutions, policies, and mechanisms is a question that has hardly started to be addressed, let alone to be implemented.

Ideas put forward on this matter include Beitz's distribution of natural resources principle (Beitz, 1979: 125-176), Steiner's proposal for a universal land tax (Steiner, 1999), and Pogge's suggestion of a Global Resource Dividend (Pogge, 2002). As discussed by Hayward (Hayward, 2006), each of these schemes has limitations. Beitz's principle is based on endowment, making countries that are resource rich (but economically poor) potentially liable rather than giving them rights. Whether and to what extent countries have consumed and benefited from natural resources is a more appropriate basis for assessing claims to environmental space (including natural resources) than endowment and geographical distribution. Steiner's idea of a universal land tax, although it does take into account the extent to which a resource (c.q. land) of a country has gained in value, is too narrow as a proxy all natural resources and the extent to which a country has benefited from them by adding (or receiving) value to/from them, and may promote the development rather than the conservation of resources (Hayward, 2006: 367). Pogge's proposed levy on (selected) resources when they are harvested or extracted (rather than consumed) potentially hits poor countries more than the rich, and may also work counterproductively with regard to their conservation (Hayward, 2006: 367-368). Hayward's own suggestion, imposing a tax on the extent to which a country exceeds its use of ecological space, appears to serve better the dual aims of discouraging environmental 'overuse' as well as enhancing distributional justice.

Hayward, however, uses ecological footprint as the basis for assessing a country's consumption of ecological space. However, this also raises an equity issue, as the ecological footprint calculations of ecological deficits (or surplus) are based on endowment, as discussed above. It seems unfair to expect people in smaller and more densely populated countries to accept a lower level of sustainable consumption than people in big and sparsely populated countries, even if people in the latter have a *higher* ecological footprint. Yet, this is the implication of taking the size of a country and its population as the basis for determining whether the claim of a country's population on resources is sustainable. A more appropriate assessment of environmental space overuse, at least in terms of resources, would be to base it on actual resource or material flows between countries, and on an assessment of the amount of 'embodied' pollution that is exported or imported with those (Adriaanse, *et al.*, 1997; Muradian, *et al.*, 2001). However, such assessments are still in their early

days and arguably too complicated to serve as a basis for policy (taxation) purposes. As resource consumption is roughly correlated with the level of personal income and wealth (World Resources Institute, 1994: 16), it would be much easier, and fairer, to impose an environmental space overuse tax on individual income and wealth. More effectively and fairer still would be to distribute environmental space at the individual level in the form of a maximum personal income or level of spending, even though such an idea may not arouse much enthusiasm among the growing number of very rich people.

Even if most or all governments were to accept the need for defining and adopting global limits on particular aspects of environmental space, they may disagree strongly about the distribution of the space available. This is borne out most clearly by the wrangling about responsibilities and targets for reducing greenhouse gas emissions. On that issue, governments of many low income countries take the view that the rich countries must take most of the responsibility for reducing emissions, because of their disproportionate contribution to the problem on a *per capita* and a historical basis. The United States, in particular, has thus far been unwilling to accept binding targets for emission reductions on the grounds that doing so might hurt the American economy and that low income countries also must accept putting limits on their emissions.

Bringing about a more equitable use of resources, therefore, is not just a matter of putting forward ideas and proposals. Although ideas and proposals are important, they need a socio-political basis to be realised. Agency, and the relative power of agents, plays a crucial role in the advancement and implementation of ideas regarding environmental limits and equity. Whether the environmental space approach will be adopted and used for promoting equity depends largely on the extent to which its social support basis can be widened and strengthened.

Environmental space and democracy

In this section, I will discuss the potential of the environmental space approach to attract a broader support basis. Giving it a broader support basis is important to avoid that the discourse on environmental limits will be used for in-egalitarian and undemocratic purposes. There is the potential to design institutions and processes for the implementation of environmental space that offer tangible benefits to most people, especially those who have under-utilised their fair share, and

that enhance democracy, enabling people to have a greater say in the way resources are being used.

There is a possibility that the (shrinking) environmental space discourse is used as a basis, by the rich, for protecting and maintaining their privileged position (Altvater, 1998; Redclift and Sage, 1999: 133-140). Concurrently, there is a real risk that the growth (or return) of scarcity will lead to a concentration and strengthening of power and control over resources at the global level to the benefit of the already rich and powerful (notably via TNCs), and to *less* rather than *more* democracy (Hardin, 1968; Heilbroner, 1980; Ophuls and Boyan, 1992). As Redclift and Sage note, present tendencies towards global environmental management “strengthen the hand of transnational and multilateral institutions in the name of the common good” and provide a basis “for the powerful to exert control over the resources of others in the name of planetary health and sustainability” (Redclift and Sage, 1999: 134-135). It is therefore imperative that those who recognise environmental limits, advocate greater equity, and cherish democracy, also search for ways by which democracy, and its social basis, can be strengthened.

Many environmental politics analysts believe that *enhancing* democracy to deal more effectively with environmental problems is necessary or desirable and feasible. Analysts point out that much of the progress in the recognition and tackling of environmental problems stems from, and requires, political institutions and innovations that allow and enhance public participation, openness, and accountability, in short, from the introduction and enhancement of democratic systems (Baber and Bartlett, 2005; Doherty and de Geus, 1996; Paehlke, 1990).

Governments, so it seems, have also embraced this view and moved away from the so-called ‘command-and-control’ approach to environmental management towards the adoption of the notion of ‘environmental governance’ and its associated ‘new’ policy instruments, including voluntary approaches, ‘partnerships’ and economic instruments (Jordan, *et al.*, 2003; Tews, *et al.*, 2003). Advocates may differ on what they see as the most desirable ways and forms of enhancing democracy (decentralised, deliberative, ecological, the ‘greening’ of states), but the beliefs of democratic optimists appear to hold much more sway at the early stage of the 21st century than those of the pessimists.

Arguments in favour of enhancing democracy also extend to the global level. Given the absence of

a world government, calls for the democratisation of global governance have focused, in particular, on the United Nations, the World Bank, the IMF and the WTO, and on the development of 'global public policy networks' (Benner, *et al.*, 2003; One World Trust, 2006; Reinecke and Deng, 2000). Cosmopolitans advocate the extension of the principles of liberal democracy to the global level (Beck, 2006; Held, 2003). In practice, however, also at this level the dominant trend has been towards 'governance' and the involvement of the 'private sector' in the design and implementation of policies rather than towards the creation or strengthening of formal democratic institutions.

The trend towards 'governance' is usually portrayed as positive and synonymous to democratisation, as it involves the participation of 'stakeholders'. However, underneath this apparently good development lurk some serious threats to the increasingly frail democratic institutions commonly referred to as liberal-democracy. Environmental governance, and the associated instruments that it relies upon, can enhance the scope for powerful and dominant interests to shape environmental decisions and policies, and be less democratic, than the so-called 'command-and-control' approach. The growing popularity of the 'new' instruments, forms of 'self-regulation' (such as Environmental Management Systems), and 'partnerships' can best be seen as moves by businesses to forestall the threat of more stringent regulatory action by governments in the face of rising public concerns and demands (Andrews, 1998; Clapp, 2005). These instruments give businesses the opportunity to remain in control and to introduce environmental measures on terms that are more easily acceptable to them, and may effectively amount to the privatisation of environmental governance. At the international level, the use of 'partnerships', for instance, in tackling problems associated with the lack of provision of basic services (clean water, sewage treatment), may function as a cover for the expansion of the interests of TNCs and the privatisation of resources and facilities, serving only those who have the ability to pay (Finger, 2005; Poupeau, 2002).

Although NGOs are often invited to participate in this 'partnership' approach, this does not make the approach democratic. Agreements are often negotiated and concluded behind closed doors, and not subject to input from, let alone formal approval by, the wider community. NGOs do not have the same resources or bargaining power as big businesses, and risk being captured by the latter in exchange for dubious promises and measures of doubtful or at most very limited environmental effectiveness and that do nothing to protect common pool resources (Andrews,

1998; Rowe, 2005) or, for that matter, privately owned resources. Voluntary agreements and ‘partnerships’ are no substitute for decisions made by democratically elected governments on behalf of an entire political community, and for which they can be held accountable.

The growing recognition of environmental and resource limits, then, has already provoked responses that tend to concentrate power and control over resources, remove decision-making further from democratic control, aggravate rather than remedy concerns about equity and equality, and that are not necessarily environmentally effective. Although advocates of the environmental space approach address concerns about environmental limits and equality, they tend to ignore or underestimate the extent to which the environmental space/limits discourse can be used to further legitimise the concentration of power and control over, and ownership, of resources, including those that are often considered as public and collective goods.

To counter the potentially undemocratic developments associated with the reliance on ‘governance’, there is, therefore, a strong case for extending formal liberal democracy to the global level, as advocated by cosmopolitans. However, although extending liberal democracy to the global level is important, it should be noted that it is also a limited form of democracy, and increasingly under threat from the concentration of economic power and growing economic inequality within and between countries. Extending liberal democracy to the global level is, therefore, unlikely to be a sufficient condition to stem the undemocratic threat associated with growing ecological and resource scarcity. To achieve the latter, the principles of democracy will need to be extended to the realm of political-economy. The key to strengthening democracy, and its socio-economic basis, lies in the advancement of economic rights and democracy.

That creating a more even economic playing field is an important condition for democracy has been long recognised (Dahl, 1985), but it has been ignored by the advocates of neo-liberalism that have become so dominant at the national and international level during the last twenty years. However, as economic inequality is resurfacing as a global social justice issue, also in association with environmental and human rights (Freedland, 2005; Hayward, 2006; Hurrell and Woods, 1999; World Bank, 2003), momentum is building to revisit the issue of economic democracy. Also in this area businesses are trying to forestall (internationally) binding regulation by adopting the notion of Corporate Social Responsibility (Rowe, 2005), but fundamentally this does nothing to either reduce

economic inequality or to introduce economic democracy.

How economic democracy can or should be promoted is, of course, also subject to debate. It is beyond the scope of this paper to elaborate on the diversity of views and ideas on this matter. But what needs highlighting is that not all schemes to promote economic democracy *necessarily* also include a recognition of environmental limits. Traditionally, economic democracy has been driven more by economic and political than by environmental concerns. However, this does not imply that the latter do or cannot play an important role in schemes that advance economic democracy; limited evidence available suggests that they do (Booth, 1994).

The value of connecting the notion of environmental space with the search for enhancing democracy lies in its focus on specific resources and the need to bring their management in line with ecological and social parameters. Thus, the notion of environmental space provides a framework for 're-embedding' resource (economic) decisions and management (and the bio-physical or material flows ignored by standard economics) within collectively defined ecological limits and social (among other, equity) criteria. Managing environmental space equitably implies the application of democracy not only to overarching political institutions, but also to decisions regarding specific resources or categories of resources. It requires the design of institutions and processes, within appropriate ecological and socio-geographical contexts, that provide opportunities to those affected by decisions on specific resources or sub-areas of environmental space to have a say in those decisions.

Here, I can refer only to some examples of what this could mean in practice. One example is provided by a variation on the ideas of tradable permit schemes for emissions. Such ('cap-and-trade') schemes are often promoted as a more efficient and effective means of reducing emissions than taxes or other forms of regulation, and tend to be preferred by economists and the business sector as they offer flexibility with regard to the means by which reductions are achieved and can be economically advantageous. For instance, to reduce greenhouse gas emissions at the global level, such an approach, under the name of 'Contraction and Convergence', has been advocated as being superior than that taken under the Kyoto agreement (Meyer, 2000; Pearce, 2003). However, although such a scheme has the potential to (cost-)effectively reduce emissions, and may generate considerable income for countries that presently emit, *per capita*, less than the global average, it does

neither guarantee that the benefits will accrue to the poor (even if poor countries may gain), nor that control over resources is democratised.

However, given certain conditions and appropriate institutional frameworks, a variation on such proposals has the potential to meet the concerns about environmental limits *and* to enhance intra-generational equity and to promote democracy. The key to achieving this combination of goals lies in the way emission rights are distributed and managed. Rather than allocating emission rights to polluters, a strong case can be made that, if such rights are to be created, they should be distributed, on an equal basis, to all people. In addition, such rights should be made inalienable (to avoid their accumulation into a few hands), and managed by elected and accountable agencies, within an appropriate ecological and socio-geographical context on behalf of and with input from those who live in that area. Moreover, such rights should be managed and used for the purpose of maintaining or enhancing the resource basis (which does not exclude people benefiting from them as individuals) rather than for merely economic (private or collective) gain. For instance, the income from the collective CO₂ emission rights leased, from year to year, by regional special purpose agencies to emitters, could be used to subsidise public transport and/or a raft of energy and emissions saving measures, including house insulation and the installation of solar hot water systems. How such income should be used would be a matter for the community to decide (Bührs, 1996).

Another example of enhancing public and democratic control over resource (economic) management can be found in the establishment of community-owned renewable energy projects, such as wind-turbines that feed local energy needs and supply surplus energy to the national grid. Such schemes are already common in Denmark, a country which has taken an early lead in the development of wind-energy. Rather than concentrating ownership, control and benefits associated with the development of wind-farms in major energy companies, as is the case in many other countries, this approach gives communities a (financial) stake and say in sustainable (energy) resource management and its expansion, and does not provoke the degree of opposition often associated with the former (Bell, *et al.*, 2005; Toke, 2002).

The discussion above shows that recognition of limited environmental space at the global level does not necessarily imply that strengthening governance at that level has to go at the expense of

national and local power and democracy. Although, often, the overall limits to environmental space will need to be agreed at the global level, national and local governance institutions remain essential to ensure resource use is brought, and remains, within limits. Thus, although global framework conventions could be concluded for sub-areas of environmental space, for instance, aimed at the protection of freshwater, productive land, biodiversity, and non-renewable resources, relevant communities (local, regional, national or transnational) could, via accountable and elected bodies, be given a formal and material stake in the management of natural services and resources. Although this may seem idealistic it is, in fact, more realistic than assuming that the management of resources is, or can be made, ecologically sustainable and more equitable, under the control of TNCs, 'free markets' or global institutions. Only citizens who are given a formal and material stake in the management of environmental services and resources, executed through elected and accountable agencies, are likely to provide the social basis and agency that is required to protect the environmental space on which their well-being depends.

Granting citizens' rights to environmental services and resources is, of course, unlikely to occur without considerable political conflict and battle. However, as this option offers potential benefits to all citizens (in variable measure with regard to different resources), it is more likely to attract support than alternatives that only stress the need to set limits, whilst expanding, in practice, the role and power of international organisations and businesses. The main point to be emphasised here is that, although advancing and legitimating democratic control over environmental space requires a global institutional framework, it can be realised only at lower levels of governance and by the agency of citizens who claim their rights to environmental space.

However, whether the notion of environmental space will be adopted at the global level, and how it will be implemented, will depend foremost on the interplay of political-economic forces and their relative effectiveness in forging dominant coalitions and hegemonic ideologies. There is no guarantee that any of the three grounds for the adoption of environmental space at the global level discussed above will prevail in the political-economic and ideological battles that are rapidly intensifying with continuing environmental deterioration and growing resource scarcity. Indeed, given the dominance of political-economic forces that blend national and capitalist interests, it is more likely that the environmental limits discourse will be adopted to justify global governance in a different way.

The securitisation of environmental limits

This section will only briefly discuss the possibility, or even likelihood, that the discourse on environmental limits (whether or not coupled to that on environmental space), will be used to further strengthen the existing political-economic order, mainly by linking it to the notion of national or international security. As this paper is foremost concerned with exploring how the notion of environmental space can be used for legitimating and strengthening global governance in positive ways, a discussion of the (extensive) literature on this ‘negative’ potential is beyond the scope of the paper. However, this possibility highlights the importance of building agency around the more positive potential of the environmental space discourse, in particular with regard to the enhancement of democracy.

In the existing political-economic context, based on a blending of nation-states and capitalism, the erosion of environmental space provokes political reactions that emphasise competition and securitisation rather than sharing equally or even equitably. This is most evident in the growing popularity among governments and military institutions of the notion of environmental security. However, rather than interpreting environmental security from an environmental, comprehensive or holistic perspective, based on the need to protect the ecological basis of societies (Barnett, 2001), government officials and the military define it in terms of the already dominant notion of ‘national security’, emphasising the need to protect the ‘national interest’ by securing the supply of vital (raw) materials and natural resources from outside the nation, including by military means, and by reinforcing national borders against the influx of ‘masses’ of environmental refugees, for instance, as the result of climate change (Kaplan, 1994; Schwartz and Randall, 2003). The adoption of such policies is likely to turn this interpretation of environmental (in-)security into a self-fulfilling prophecy. The more the already privileged act to protect their own position at the expense of others, the more likely it is that the decline of environmental space will lead to hostile reactions and conflict.

Although some analysts are well aware of these dangers and have warned against linking environmental concerns to the national security agenda (Deudney, 1990), this does not by itself prevent the abuse of the environmental limits discourse by dominant interests. Similarly, there is no

way of preventing the notion of environmental space to be interpreted and used to justify policies aimed at the protection or appropriation of space for the benefit of the rich and powerful at the expense of those who already use (much) less than the global average. As discussed above, advocates of the environmental space concept may interpret space foremost in terms of ecological rather than absolute resource limits, but this does not mean that governments and TNCs will not use it to further reduce public access and control over resources, for instance, by privatisation. Indeed, to a large extent, the development of options to address climate change, the protection of biodiversity, freshwater, fisheries, and the development of alternative sources of energy, is driven and dominated by TNCs who are intent on securing and expanding their control over resources, be it in competition with each other, and often in coalition with government officials and NGOs (Levy and Newell, 2005). Already, this has led to a process that has been referred to as the privatisation of global governance and that has nothing to do with the democratisation of environmental and resource governance advocated above.

At the same time, it is not unlikely that the shrinking of environmental space will be used by the most powerful states to justify military intervention, possibly formally sanctioned by global institutions, where and when governments are not willing to subject their resources to this (privatisation of global governance) process and/or limit resource exploitation to protect the long-term resource basis of their economies. The Iraq wars and the recent jostling by Russia and other countries for control over the Arctic, can be seen as examples of the securitisation and militarization of resources. Although this is not a new development, growing scarcity, and the additional rationale of protecting environmental limits, may well lead an intensification of such developments.

Conclusion

The notion of environmental space, based on the principles of the need to respect environmental limits, and of equitable sharing environmental resources, provides a basis for legitimating and strengthening global governance in at least three, positive, ways. First, it provides a cognitive framework for dealing more comprehensively and effectively, at all levels of government, with the pressures associated with the growth (or return) of scarcity. As the ecological and resource basis of human life on earth is increasingly compromised, the concept also assists in legitimating, at the

global level, the determination of limits to the exploitation and consumption of resources. Second, the environmental space approach supports, notably at the global level, a more equitable distribution of access to, and/or the benefits from, resources that are becoming increasingly scarce (because of ecological reasons and/or growing absolute scarcity). Third, the notion of environmental space can be used as a basis for designing and introducing institutions and processes that enhance democracy and community control over the use of resources.

Already, several instances of growing global agreement on the need to respect environmental limits can be identified. However, these developments are mostly confined to areas of environmental space which can be referred to as 'common pool' resources, or in which alternatives (alternative products or resources) are more or less readily available at relatively low cost. Creating international agreements on areas of environmental space (including resources) that are owned and controlled by the business sector and/or governments, and that are strategically important and/or for which alternatives are costly and/or not readily available, appears to be even more problematic. With regard to the latter, environmental space is gradually but inexorably eroded through a process that may be referred to as the 'tragedy of serial depletion'. With globalisation, and in the context of dominant political and economic rationality, resources (and their substitutes) are eroded and ultimately depleted one-by-one, and from place to place, only to become regarded as problematic when total demand starts to outstrip demand on an ongoing basis. By then, ecologically sustainable resource management may no longer be feasible, or only at a much lower level.

To avoid the possibility, or perhaps likelihood, that the erosion of environmental space will lead to a sharpening of competition and conflict, and/or to the imposition of limits (including by force) in a way that protects the position of the rich and powerful at the expense of the environmental space available to the poor, it is necessary to enhance democracy. Enhancing democracy, from an environmental space perspective, not only implies extending the principles of liberal democracy to the global level (however important), but also the creation of institutions and processes that grant people, within appropriate ecological-geographical contexts, a material stake in, and formal rights and control over specific areas of environmental space (including resources). Depending on the resource or area of environmental space, a variety of forms of economic democracy can be designed. Which forms may be more desirable and feasible is a question that is best addressed by analysis of the political-economic constellations associated with particular areas of environmental

space or resources and the development of strategies and coalitions on that basis.

Ultimately, whether the potential to use the notion of environmental space in positive ways, as outlined in this paper, will be exploited depends on the building and strengthening of a social support basis, and agency, aimed at realising this potential. The prospects of building such a basis are likely to vary from resource to resource, and from country to country. But given the linkages between resources and countries, such a support basis will also need to be built at the global level. This is a daunting task, but vital if the bleak and self-defeating scenario of the 'securitisation of environmental limits' is to be avoided.

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