Introduction: Human security and the environment at the new millennium

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1 HUMAN SECURITY AND THE ENVIRONMENT IN THE TWENTIETH CENTURY

This book examines the meaning of 'security' and the 'environment' in the post-Cold War era, and the ways in which the activities of human societies are shifting the balance with nature. Throughout the twentieth century, many of the conflicts between human societies and the natural environment have reflected differences in the capacities and wealth of human societies. In the developed world, ecological movements grew up which expressed concern about the implications for nature of unfettered economic growth. Rising levels of personal consumption, and unsustainable systems of natural resource and energy procurement, were taking a heavy toll on the planet (Redclift, 1996).

Awareness of the possible implications of global climate change only served to highlight divisions between the North and the South. In the North, the pursuit of higher living standards was, paradoxically, threatening the quality of life of many people caught up in the momentum of 'getting and spending'. In the South, countries intent on achieving the benefits of economic development have been faced by contradictory pressures. Increased dependence on fossil fuels, rising living standards and population pressures are serving to exacerbate the 'forcing' of world climate change. At the same time, threats to their domestic environments – to tropical forests, vulnerable coastal areas and wetlands – have forced developing countries to re-examine the more immediate environmental security of their own populations.

In 1987 the term 'security' was still defined solely in terms of military preparedness. This was the year that the Brundtland Commission published its report, 'Our Common Future', which introduced the term 'sustainable development' into our vocabulary (WCED, 1987). In 1987 there were still four years before the Cold War ended: on 24 August 1991, in a message from President Gorbachev that the Soviet Union would be abolished. Some two years later one of us recalls visiting a Chinese village and, at a village market,

being confronted by a plastic globe among the rubber boots and vegetables. 'This is a globe of the world' – it read in Chinese – 'Germany is now one country and the Soviet Union no longer exists.'

The history of 'sustainable development' – at least in the modern period – started over a decade before with the oil crises of the 1970s, the growth of 'petrodollars' in Western banks, and the Mexican and Brazilian debt crises that this provoked, beginning in August 1982. But the roots of this twentieth century 'environmental crisis' were laid earlier. Clearly the key decade for the emergence of hydrocarbons on the global stage was the 1970s, when oil prices rose dramatically in two bursts, and the power of OPEC was born. These difficulties led, in turn, to a public re-examination of the relationship between what came to be known as the 'North' and the 'South', in the form of the Brandt Report in 1980 (Brandt Commission, 1980).

The Brandt Report charted a future for development that relied heavily on raising demand in the South for the goods and services provided in the North. In 1980 the development of the Asian 'Tiger' economies was not yet fully underway, and the so-called 'newly-industrialising countries' were still taking faltering steps towards development. Few people would have predicted, in 1980, that China would maintain an annual growth rate of between 7 and 10 per cent throughout much of the 1990s, and that by 2020 it would be expected to have a gross domestic product (at purchasing power parity) 20 per cent larger than that of the United States.

In the early 1980s a number of reports were published that were to mark an important stage in the way that environmental problems were perceived. First there was the World Conservation Strategy (1983). The evidence of serious environmental problems, many of them on a global scale and linked to discernible 'global' systems, was becoming clearer, and the second World Conservation Strategy (1991) developed a stronger focus on their interaction with human systems.

The second significant report from the early 1980s was the Global 2000 Report (1982) ('commissioned by President Carter and published under President Reagan' as the blurb read). This document, of over 1000 pages, barely mentioned climate, but it did bring modelling to bear on global issues. Building upon the innovative science and breadth of the Man and the Biosphere programme (MAB) these reports, and the work of UNEP (United Nations Environment Program), made loud warning noises to the international policy community. These assessments, like others at the time, were broadly influenced by the idea that *limitations in the resource base* would make it increasingly difficult to support economic and social development. This was the era, almost quaint from an historical perspective, of 'Limits to Growth'.

Two decades ago the environment and development were still seen as parallel but distinct discourses and the 'problems' of development were seen

as caused by the limits this placed on human ingenuity. The human individual was set apart from the 'problem'. This was an era of modernist aspiration, in which 'development' was problematic in one sense only – that it seemed to be denied to some. The 'problem' with development was that there were structural obstacles that prevented its benefits from being shared more widely. As yet there were few root and branch critiques of the whole 'development' project, as seen from Green or postmodern perspectives.

Not until the Brundtland Commission reported, in 1987, after pioneering and exhaustive 'consultations' throughout the globe, was there an intellectual attempt to integrate the environment and development discourses.

2   LATE TWENTIETH-CENTURY CONCERNS

The first late twentieth-century concern was almost prompted by accident. British scientists working in Antarctica 'discovered' the ozone hole, an observation which was to drive political pressures for dramatic reductions in CFC gas emissions, pressures which culminated in the Montreal Protocol of 16 September 1987.

The first generation of multilateral environmental agreements date back to the early twentieth century, although most were signed in the 1970s and 1980s. They were largely single issue, sectoral agreements, primarily addressing the allocation and exploitation of natural resources, particularly wildlife, the atmosphere and marine environments – the so-called 'global commons'.

The second generation of multilateral environmental agreements have tended to bridge sectors, and to be based more on 'systems'; they are more holistic in design. This second generation really commenced with the Earth Summit held in Rio de Janeiro in 1992. Unlike many earlier agreements, the two conventions to which Rio gave rise (the UN Convention on Climate Change and the Convention on Biological Diversity) were highly contested, and involved diplomatic battles and posturing throughout the negotiations, as witnessed in the meeting of the Conference of the Parties (COP6) in the Netherlands in November 2000.

Both climate and biodiversity present major problems for a 'traditional' view of environment and development. After the early climate assessments of the Intergovernmental Panel on Climate Change (IPCC) it was more difficult to view traditional economic activity as an unproblematic 'good'. In the year 2000, we were told by UNEP (Global Environment Outlook, 1999), governments spent more than $700 000 million a year in subsidising environmentally unsound practices in the use of water, energy, agriculture and road transport. Many of these practices reflect 'underlying social commitments' – unques-

tioned social practices – with serious environmental consequences. They include our everyday uses of domestic energy, waste disposal and motorised transport. In the wake of UNCED (United Nations Commission on Environment and Development), these everyday practices have attracted closer examination and a more concerted effort to identify sustainable alternatives.

The fallout from Rio in 1992 was not *only* 'material', however, it was conceptual as well. Climate change was a 'problem' apparently caused not by scarcity but by 'plenty' – by high levels of personal and collective consumption polluting the medium through which we dispose of our waste (water, air and land). Most obviously, carbon emissions contributed to greenhouse gas concentrations in the atmosphere.

The 'discovery' that we lived in a 'global village', illustrated most vividly by the Chernobyl disaster in the Ukraine, was prompted by unforeseen problems in the *systems* through which we breathe, eat and reproduce. The reality of globalisation was revealed in the major food scares of the 1980s and 1990s, such as BSE/CJD, and the even larger, and more complex issues, prompted by the spread of HIV and AIDS.

BSE and AIDS are examples of systemic problems, which prompt unease with the links we have established between humans and 'nature', and the reliability and risks of 'science'. These problems were global in both senses: they occurred, and were transmitted globally, and they were part of *systems* that were difficult to access, or even fully understand. They brought scientific uncertainty into the realms of intimacy, of our most intimate social experiences.

The occurrence of these types of problems also served to undermine an earlier, more confident, view of 'mastering' nature through science. The modernist impulse to conquer and consume seemed to have been stopped in its tracks. It was difficult to stand 'inside' or 'outside' global issues like climate change, BSE or AIDS – since they permeated territorial boundaries and space. Significantly, they also permeated the body.

The heightened environmental concern that led to the Earth Summit of 1992 also produced an important stimulus for civil society (a much neglected concern in the previous decade, when some thought it did not exist at all!). It is easy to belittle the importance of Agenda 21 after apparently endless local committee meetings in countless halls and meeting rooms throughout the globe. But who spoke the language of sustainability, or local/global linkages before these thousands of local-level Agenda 21 initiatives were embarked upon? Who would have listened to the victims of fuel explosions in Mexico, or damaged pipelines in Nigeria, if there had been no 'global' template against which unsustainable practices, and corrupt governments, could be measured, and found wanting?

The raft of policy initiatives after the 1992 Earth Summit also introduced another important element into thinking about sustainable development at the

global level. This was the new thinking that had begun to develop about 'environmental regimes', to use an example of late twentieth-century jargon. Multilateral environmental agreements were increasingly based on 'a holistic approach under which all species should be exploited sustainably or not at all' in the words of UNEP's Global Environmental Outlook (1999). However holistic, multi-sectoral agreements involve so many different and cross-cutting areas of law, policy and international politics, that they invariably engender unprecedented conflict. Much more was at stake for contracting parties who signed up to the Framework Convention on Climate Change than was the case with most agreements 20 years earlier.

It was in this context that non-binding instruments have come to play a large part in international environmental negotiations. National governments and the media pay more attention to binding instruments, but agreements that work only with the voluntary consent of the parties are just as important. At their best they provide a looser framework for action, which helps to foster discussion and attention to policy gains and new ways of thinking about human societies and nature. It was argued that, before we can move forward on the big issues such as carbon emissions or endangered species, we needed to change the behaviour of some target groups, such as business, and protect and enhance others, such as endangered peoples.

It is possible to favour non-binding agreements without ignoring the importance of compliance. Only when the costs of non-compliance are high enough to act as a deterrent will enough resources and attention be given to compliance. That is the paradox that lies behind much of the so-called 'soft law' that is literally being created as we enter the twenty-first century.

Other policy moves have taken important directions. The effort to establish the 'value' of nature has become an area of enormous controversy, in which even the charmed models of economists have been questioned, and they have broken into various camps virtually unknown 20 years ago. Even for those who take a 'radical' view of the imperfections of the market (often termed 'ecological economists') the challenge has been to find ways of internalising environmental costs, and the movement to do so even has a name, derived from the German, 'Ecological Modernisation' (Giorgi and Redclift, 2000).

The other major conceptual, and policy, area that opened up to an unprecedented degree at the close of the old century was that of 'managing' risks and uncertainties. The unbound copies of Ulrich Beck's *Risk Society* (Beck, 1992) arrived in an unsuspecting academic world just as the British were beginning to recognise the realities, and perils, of CJD/BSE. Beck's work, and that of others, laid bare the problems of 'high consequence' risks that could not be contained by better 'reactive' environmental management (the name for most of the environmental policy that had marked the twentieth

century). In future, the bywords would be 'precautionary principle' and the limitations of 'expert witness'.

Valuation of nature, like much else, seemed trapped by patterns of thought which neglected things we could not count – largely because we had not tried to count them. The neoclassical solution was to draw nature into the ambit of individual choice and markets. This, in turn, raised problems both in terms of public understanding and the usefulness of 'willingness to pay' when applied to very different publics.

In response to the injunction to quantify environmental damage, and express it in terms of 'external costs', a highly sceptical extreme constructionist backlash set in among many in the humanities and social sciences. The existence of policy uncertainties as well as scientific uncertainties was, in their view, a condition of modernity itself. We lived in a world of increasingly fragmented sites that were the product of the way we understood problems. In seeking the price of everything, in Wilde's epigram, we risked knowing the value of nothing.

By the end of the twentieth century, then, it had become recognised that any agreement about 'sustainable development' told us more about the advocates than the process itself. Sustainable development was not a convergent, manageable, process, but a set of contradictions. Problems were emerging with nature and science, as well as with global management of the environment, that left us suspicious of scientists, and those who read the news to them, the politicians. These problems told us more about 'society' and the way that we arrive at decisions, than about 'science'. Meanwhile, the individual seemed to be located in a new kind of 'reflexive modernity'.

3   CARBON POLITICS

Looked at differently (post IPCC, post Earth Summit) many, if not most, of the twentieth century's concerns had environmental causes. The war in the Pacific is one example: in which Japan pursued a quest for control over much needed energy supplies. The collapse of the Soviet Union was another: in which the weight of energy subsidies hindered the modernisation of the economy and the systems of allocation through central planning. A third example is the growing divergence between the so-called 'Third World' today, and the inability of large numbers of people to maintain a livelihood without forsaking their own environments as refugees.

Security issues were increasingly linked to a chain of 'natural' processes and unanticipated consequences of human demand – biodiversity losses, hydrocarbon supplies, water and likely climate change impacts. International agreements over greenhouse gases (GHGs), and trade (World Trade Organi-

sation, WTO), seemed to undermine national borders, or led to borders being contested (EU expansion eastwards, NAFTA in North America). Responsibility for climate change – which was a principle implicit in the climate change negotiations – has led to an examination of the individual levels of per capita carbon emissions and the role of carbon sinks.

Carbon emissions have become part of the currency of international politics and environmental security. Countries like to be credited with reducing their levels of emission, and new systems of market trading are beginning to grow up around *trading* in carbon (trading in the *unsustainable*, some have objected). Businesses do not know the cost of carbon, and it is unlikely that they ever will if penalties are not imposed on companies that produce it. The new dawn under which business is subjected to penalties is already being anticipated by some, and proving to be a profitable business in itself.

In anticipation of an agreement at COP6 in The Hague in November 2000, Garth Edward of Natsource, an emissions broker already trading in GHGs, estimated the cost of carbon (to its producers) at between US$1 and US$3 a tonne. *The Economist* reported that a pre-compliance market had already sprung up around carbon trading, and as the market developed the price was likely to rise. The World Bank's carbon fund (PCF) has been given the role of 'independently verifying' reductions in carbon emissions, and transferring credits from renewable energy schemes to the fund's investors. These are mainly energy utilities in Japan and Scandinavia. For example, some Japanese utilities, which cannot reduce their carbon emissions much more, are expected to 'buy' credits in projects for carbon reduction and substitution. Of course, the higher the price of carbon the greater the interest in cutting emissions.

In this respect, transnational corporations are *anticipating* governments by entering into agreements which help them attain their own business objectives, while providing a blueprint for much more extensive future negotiations. Shell, for example, has promised to cut GHG emissions by at least 10 per cent below 1990 levels by 2003. Carbon credits are one way of making these aspirations a reality, while also educating both buyers and sellers.

The other important dimension of this process of carbon accounting is accounting for carbon sinks. Many of the supposed carbon 'sinks' are in the developing world, and in areas such as tropical forests, which are under threat from a number of directions, including transnational corporations themselves. According to some recent models of sustainable development 'community mobilisation' can be undertaken through 'conservation-with-development'. Development is pursued, more sustainably, by tying it to the conservation of the environment. This approach emphasises the need to secure community access to valuable natural resources. However, the more we learn about the 'local' the more we realise that it is rarely *purely* local – it is created in part

by extra-local influences and practices over time (Watts and Peet, 1996). Communities need to be situated within a broader institutional context (Agarwal, 1999, p. 640).

Defenders of carbon sinks as a future means of income generation in poor rural communities argue that in future the valuation of carbon sequestration (which is pressed particularly by the United States) can enhance community development efforts. Future accords, they argue, will provide such communities with a much valued bargaining tool in negotiations with governments and transnational companies. This will serve to transform theoretical 'willingness-to-pay' estimates into increased income opportunities (Fearnside, 1997; 2000).

As so often in the real world, however, these kinds of innovative mechanisms could also have perverse effects. In Brazil, for example, the biggest players are likely to be sugar-cane and paper-pulp industries, which are busily reinventing themselves as 'green' industries, positioning themselves for future carbon credits. Poor rural communities are still outside the policy 'loop' and unlikely to benefit in the short term.

4   BEYOND CARBON

Table I.1 illustrates the growth of dependence on carbon during the last century. This suggests that the use of biomass fuels, such as firewood and animal dung, has almost doubled in the two centuries since 1800. On the other hand, coal consumption increased five-fold in the twentieth century alone. The growth in oil consumption was even more dramatic, especially in the second half of the twentieth century. At the same time, global energy consumption is very unevenly distributed. Each individual in North America consumed almost three times as much energy as in Europe, and over ten times as much as in Sub-Saharan Africa and South Asia. These estimates include data from developing countries for non-commercial energy.

Table I.1   World fuel production (million tonnes)

Year	1800	1900	1990
Biomass	1000	1400	1800
Coal	10	1000	5000
Oil	0	20	3000
World energy use	21	100	1580

Source: McNeill (2000).

If we are to advance towards a cleaner, more sustainable, future the 'playing field' clearly needs to be levelled. At the moment energy consumption figures disguise huge, and largely hidden, subsidies to fossil fuels. These subsidies need to be made more transparent, and steps taken to reduce them dramatically. One policy measure that will help achieve this is the introduction of carbon taxes, to ensure that the price of fossil fuels reflects the true costs that they impose on human health and the environment.

At the same time, more progress needs to be made on renewable sources of energy. Some renewable energy technologies, such as wind power, are already becoming commercially viable, even in the absence of the level playing field. Denmark, for example, now produces sophisticated wind turbines that can compete in the world market. In some parts of Denmark, Germany and Spain almost 30 per cent of the energy used is from wind power. The principal problem of utilising wind power is that in the absence of cheap and efficient ways to store energy it is not readily dispatched. As energy markets have become liberalised this can present a serious problem – since green energy sources cannot compete effectively at peak rates. The next few decades should see technological breakthroughs in fuel cell technologies and in storage technologies, both of which should help overcome some of these problems in supply.

However, the greatest challenge, and opportunity, for renewable sources of energy, lies in the South where, during the next two decades, two-thirds of future energy demand will take place. Where the electric grid does not exist, or it is prohibitively expensive, renewable sources of energy can offer excellent *local* energy sources. If governments in the North do more to invest in, and support, renewables, the benefits flowing to the developing world are likely to increase substantially.

In the North, too, there are indications that our dependence on hydrocarbons can, gradually, be eased. A century ago, Thomas Edison built a plant near Wall Street, in New York, which was designed to provide a network of decentralised power plants, near people's homes. Economic development during the twentieth century took us closer towards the centralised grid; but at last the wheel is turning full-circle. There is growing awareness of the social and environmental costs of using fossil fuels: two million infant deaths in India are caused from the 'indoor' pollution of cooking stoves. Micropower units enable power to be generated closer to home, closer to the end-user, and provide a real alternative where the central grid is not a feasible option.

Micro-power can also benefit from advances in software and electronics, and should enable a *combination* of power sources to be used. In the industrialised world new power plants can be built which use both natural gas and renewable energy. It is possible to foresee a future in which the national grid

is used as a back-up to more localised sources of supply. 'Micro-grids' might be built which link together dozens of micro-power units, based on fuel cells and wind turbines, which themselves combine heat and power, providing a decentralised and locally-responsive source of energy with few adverse environmental consequences.

As we look towards developments in energy technology and rising levels of consumption in the twenty-first century, it is clear that our 'addiction' to carbon is not an intractable obstacle to improvements in human security. Indeed our dependence on fossil fuels was itself symptomatic of the view we took of 'external nature', of the biomass on which we depended for our life support systems. In the twenty-first century our definition of 'security' will have enlarged to include the *relationship* that obtains between human societies and nature, in which the growth of fossil fuels has been an essential part. Sustainability in the twenty-first century means not only internalising *external* environmental costs, through cleaner technologies for managing energy and waste production, but developing a clearer role for human beings which places individual needs within a broader, more future-oriented, perspective.

5   OUTLINE OF THE BOOK

The chapters in this book bear testimony to the way in which both 'security' and 'sustainability' are being reworked as concepts and increasingly linked to social, economic and cultural factors. The concept of human security has partly emerged in response to the neglect of human dimensions in thinking about environmental issues. Following Barnett (2001), a distinction can be made between threats to national security that arise from environmental degradation ('environmental security') and the impacts of human societies on the environment itself ('ecological security'). The importance of emphasising *human* security is that it suggests cognate areas of policy and discourse, such as environmental justice and human rights, which serve to broaden our understanding of environmental concerns. Of course, the link between human security on the one hand, and environmental security on the other, is itself quite subtle. It is the view of the editors that the latter is best viewed as a species of the former; that environmental threats such as those associated with global climate change are significant, but not exhaustive, determinants of human insecurity. Thus, when we talk of environmental insecurity we presuppose some degree of human insecurity, but not vice versa: some threats to human security arise through socio-economic variables which have little or no connection to environmental stress or degradation.

For the sake of simplicity, in what remains of this introduction we refer mainly to environmental (in)security and its determinants. However, it is

worth observing that both *human* security and *environmental* security are relatively new and somewhat under-theorised concepts. They are also highly controversial, complex and contested. They are *controversial* mainly because these ideas cannot be easily accommodated into the traditional security discourses of international relations and political science. Human security, according to one of its most influential proponents, 'applies most at the level of the citizen. It amounts to human well-being: not only protection from harm and injury, but access to water, food, shelter, health, employment, and other basic requisites that are the due of every person on Earth' (Myers, 1993, p. 31). In focusing on the condition of individuals, and in emphasising the rights and moral standing of individuals in contrast to the states to which they belong, human/environmental security is not easily reconciled with traditional, state-centric accounts of security that focus on internal and external military threats to the territorial integrity of national states. That is, human/environmental security is inconsistent with the well-entrenched view in international relations scholarship that security concerns 'the effort to protect a population and territory against organised force while advancing state interests through competitive behaviour' (Dabelko and Dabelko, 1995, p. 3).

The notion of environmental security is *complex* as a result of there being at least three plausible accounts of the nature of environmental security. What we might refer to as environmental security(1) focuses on the way in which environmental stress causes violent conflict (and thereby *in*security); environmental security(2) focuses on the way in which violent conflict exacerbates environmental stress (and thereby *in*security); and environmental security(3) encompasses both the way in which environmental stress causes violent conflict and the way in which violent conflict exacerbates environmental stress. The central focus of most of the papers in this book is the first of these accounts, although much ground is covered that is also relevant to the second and third understandings of security.

The notion of environmental security is *contested* as a result of it being prone to endless, irresolvable dispute regarding its meaning and application. This is not because the concept attracts alternative and conflicting accounts put forward in 'bad faith'. As W.B. Gallie has argued in the context of a discussion of political theorising, it is because disputes centred on concepts such as environmental security 'although not resolvable by argument of any kind, are nevertheless sustained by perfectly respectable arguments and evidence' (Gallie, 1956, p. 169). Put a different way, to say that a concept is essentially contested 'is to contend that the universal criteria of reason, as we can now understand them, do not suffice to settle these contests definitively' (Gallie, 1956, p. 169). Consider the disputes in security studies between the proponents of environmental security and their critics. The idea is that, while these writers appeal to a shared concept of environmental security in the sense that they will agree in

regarding a number of environmental variables as either potential or actual threats to security, in many other situations they will disagree over the application of the concept. One interesting example of this contestedness, given by Barnett, concerns the example of Australia (Barnett, 2001, pp. 24–5). He notes that the different perceptions of military threats and environmental threats are such that support for military budgets still far outweighs that for funding for environmental preservation measures, despite the fact that any 'objective' analysis of the Australian situation would suggest that the security of the population would better be safeguarded by more resources being targeted towards the latter than the former. Barnett goes on to point out that the problems of risk and uncertainty, and their impact on people's perceptions of security threats, make objective judgements of environmental security difficult to sustain. The idea is that disputes between those who view environmental preservation as peripheral to (national) security and those who view it as central are not necessarily driven by bad faith or poorly constructed arguments on one or both sides, but rather reflect features of the concept of security itself, namely, that its structure is irreducibly complex and subjective.

5.1   Part I: Concepts

In the first section of the book, a number of conceptual issues surrounding the link between environment and security are discussed. The starting point of Edward Page's chapter 'Human Security and the Environment' is the claim that global environmental change raises a number of questions for researchers engaged with the problems of the scope and content of security. Page seeks to provide a conceptual overview of recent contributions to the notion of 'environmental security' in order to bring into clearer focus the key issues on which contributors to this important debate disagree. In particular, he examines the claim that the concept of security should be extended in order to accommodate (i) 'non-military threats' such as environmental degradation, and (ii) the security status of entities other than the state. Page goes on to outline a typology of views on the connection between environmental change and security, which turns on the way we approach two key questions. First, he asks what are the *subjects* of security discourse? (He goes on to call this the *scope* question.) Second, he asks what sorts of things can be threats to security? (He goes on to call this the *content* question.) In essence, the argument of the chapter is that any cogent account of environmental security must provide clear, and defensible, answers to these two questions. In the course of his argument, Page raises some serious objections to what he calls the 'moralised' nature of recent accounts of human security, before proposing a methodological approach to issues of environmental security that draws on the political theory of John Rawls.

Even if it is supposed that clear, and defensible, accounts can be given of the scope and content of environmental security, there are a host of other theoretical issues raised by this concept. Some of the most intriguing of these concern the relationship between environmental security and a range of other political ideals, such as democracy, civil society, social justice, freedom, community and equality. Perhaps the most discussed conceptual relationship concerns security and democracy. The recent wave of democratisation, for example in Eastern Europe, has stimulated much research on the beneficial effects of democracy on international affairs, notably on conflict resolution and economic development. Since most democracies are highly developed, and embrace free-market ideology, environmentalists have often been sceptical about the prospects for environmental preservation in democratic countries. While some have assumed that preserving the environment requires a strong, possibly authoritarian state, and that democracies seem incapable of solving 'tragedy of the commons' type dilemmas, recent literature suggests a more optimistic view. In Chapter 2, Nils-Petter Gleditsch and Bjørn Otto Sverdrup argue that despite the fact that democratic states have adopted patterns of development that have often been disastrous for the natural environment, they have a range of resources which can be mobilized in the future in order to manage environmental change. The heart of the paper is a ground-breaking empirical analysis which shows the generally positive bivariate effects of democracy on environmental performance, and more uniformly positive effects when controlling for the level of development. The authors conclude that democracies, in addition to overcoming national environmental degradation more efficiently, are also more effective conduits for cooperative solutions to international environmental problems.

As noted above, much of the discussion of environmental security has confused the implications of environmental problems for the human condition with the effects of human activities on the natural environment. This is the basis of the need to distinguish between *environmental security* and *ecological security*. In Chapter 3, Michael Redclift examines the way in which literature on the international dimension of sustainability has also confused the rights to 'manage' nature with the civil rights of populations, most of which are faced with difficult environmental problems and choices. It is suggested that we need to look hard at the basis for the legitimacy of our actions, and avoid confusing human rights in civil society with our obligations to environmental sustainability. The chapter goes on to argue that, before we can fully explain many of the paradoxes surrounding sustainability, we will need to disentangle some of the terms that have entered the discursive terrain.

One of the pre-eminent goals of recent social-scientific research on environmental sustainability has been the construction of scientifically robust and

policy relevant indicators and indices covering a broad range of environmental and developmental variables. Research on development and poverty indices under the auspices of the United Nations Development Programme is a good example. In an attempt to assess progress toward achieving sustainability and human security, a number of analysts are working hard to identify indicators that measure both the state of (and people's access to) economic, social and natural resources. In Chapter 4, Steve Lonergan and associates, who are acknowledged leaders in this field of concern, address the problem of developing cross-national indices of human security that might provide the basis for more effective environmental policymaking. They explore the challenges associated with constructing robust indices of human (in)security, where human security is seen to focus on a secure livelihood for individuals and society and an absence of (armed) conflict. The authors review a selection of these indicator frameworks and various attempts that have been used to model indicators in order to identify future research opportunities.

5.2   Part II: Challenges

In the second section of the book, three particularly important challenges to environmental security are discussed. These are climate change, food security and water security. In Chapter 5, Johannes Stripple explains why global climate change is an issue of human *in*security *par excellence.* As he observes, climate change has been an issue on the scientific agenda for over a century, but has only recently become a focus for research in international relations and environmental politics. The implications of global climate change for patterns of international order and disorder have, therefore, yet to be revealed. As Stripple observes, scholars have in general viewed climate change as both a source of cooperation and as a source of insecurity, although the latter view has gained increasing support in the light of recent Intergovernmental Panel on Climate Change research reports on global warming (and its largely negative future impacts on human health and well-being). Stripple defends what he terms a 'constructivist' interpretation of climate change as a security issue. Constructivism in this context implies that neither what is counted as a security threat, nor the entities that we view as the focus of security discourse, can be determined prior to empirical analysis. Instead, questions can be asked about these issues, such as what are the reference objects of climate change: *who* or *what* might be threatened by it? Here, Stripple's discussion has interesting points of contact with Page's contribution on the environment–security relation. He also goes on to present a detailed summary of the climate change issue and how it may be approached, and an overview of the natural and human systems that are perceived to be sensitive and/or vulnerable to climate change.

In Chapter 6, Colin Sage discusses various issues surrounding the question of food security, which he takes to mean 'adequate access to food that is culturally and nutritionally appropriate throughout the year and from year to year'. There are two critical features of food security that have raised its profile in the discussion of human/environmental security in recent years. The first is the issue of world hunger and malnutrition. Drawing on research conducted by the UN, Sage notes that at least 800 million people in the world do not have enough food to eat, whereas over 30 million people in the developed world suffer from chronic food insecurity. The second feature is the way in which food security links to all of the key dimensions of human security (that is, political, economic, health and environment). Sage sets out to explore the concept of food security, to relate it to other dimensions of human security, and to see how it is applied at different geographical levels. After outlining recent developments in food security scholarship, for example the way in which it has been critical of the focus on calorific intake as being synonomous with nutrition, Sage goes on to outline the connection between environment and food security at different geographical levels. Particularly interesting, here, is his discussion of the food security impacts of climatic change (at the global level), civil conflict (at the national level) and gender inequality (at the local level). Finally, he discusses the limitations of recent food security interventions in Pakistan and Central America. He argues that these interventions have had limited success because they have failed to engage sufficiently with indigenous understandings and beliefs about food security, as well as with local-level experience of technology, production and other socio-economic variables. It is worth noting that Sage comes to similar conclusions in this regard to the other contributors to the volume who look at environmental security in the context of indigenous communities (Matthew in Chapter 9, Cocklin in Chapter 7 and Fernández-González et al. in Chapter 12).

Discussions of the link between environment and security often make reference to water. This is not surprising given that there are widespread scarcities of supply, water is essential to human survival, it has value in economic terms, and that some water management institutions are of strategic political significance. It seems that the extent and intensity of social, environmental, economic and strategic problems associated with water are bound to increase in the future. Numerous articles have addressed the link between competition for shared water resources and violent conflict. The view defended by Barandat and Kaplan is typical of many contributions to the 'water as a security issue' debate. The authors argue that

> One area of regional conflict that is of global importance is access to fresh water. In the future, it will not only be a limiting factor in the production of food, but also a key to the development of industry. Hence, fresh water will become a major

element that defines national security policy. Thus it is necessary to expand the definition of the term 'aggression' to include the deliberate withholding of water from a state. (Barandat and Kaplan, 1998, p. 12)

Consider the much discussed case of water supplies in the volatile Middle East region (see Myers, 1989, pp. 28ff; Homer-Dixon, 1991, pp. 13–14; Scheumann, 1998, pp. 113–34). At the heart of much, if not all, inter-state conflict in this region is the fact that 15 states compete with each other for fresh water supplies contained in just three river systems: the Nile, the Jordan, and the Euphrates. The demand for fresh water in the region consistently threatens to outstrip its supply, with the result that hostility and violent conflicts over water resources are a constant cause for concern. Aside from simple demand–supply issues, other factors have contributed to water insecurity in the region. One important factor is that a number of Middle-Eastern states are contemplating 'unilateral' dam projects which, although their primary purpose is to facilitate irrigation in order to increase agricultural output, threaten to divert water away from neighbouring states. A second factor is that the Middle East region is subject to significant population growth.

In the first of two chapters in the volume that address the link between water and human security, Chris Cocklin considers the under-researched question of the way in which access to, and quality of, water resources impacts upon cultural values and relationships. The point of departure in the discussion is the thought that 'inappropriate' uses of water, environmental degradation in water management, or competition-induced scarcity in water resources, can have just as pernicious an effect on the ability of cultural groups to sustain their livelihoods as they have on human and animal health. The analysis builds upon a well-established literature on the cultural significance (and the social construction) of the notions of 'nature' and 'environment'. Cocklin goes on to argue that decisions taken about the use and development of water resources can have the effect of undermining cultural security. This in turn rests on claims about the social construction of nature and the inseparability of nature/culture, and recent research on the nature/culture relation among indigenous peoples of New Zealand and Australia.

5.3   Part III: International Cases

The ending of the Cold War in Europe destroyed many of the old certainties about the character of threats, the meaning of security and the identity of the providers of security. It also coincided with the upsurge of public and political interest in global environmental change. As noted by both Page and Stripple, one consequence of this was an ongoing academic debate on the redefinition or extension of existing security concepts with particular refer-

ence to environmental threats. Although much of the recent research has been conducted in North America, there have also been significant European contributions.

Most academic work within Europe has avoided a radical re-conceptualisation of security along the lines proposed by writers such as Ullman (1983) and Myers (1989), and has instead focused on extending existing security concerns with armed conflict to encompass the consequences of environmental change. One example mentioned by John Vogler in Chapter 8 on European contributions to human/environmental security is EU-funded research that seeks to model the relationships between physical and socio-economic change and conflict behaviour. Such work has supported the insight offered by North American writers, such as Thomas Homer-Dixon (1991), that there exists no simple causal connection between environmental stress/degradation and violent conflict within, or between, states. Another example is the EU-funded Network on Environmental Security (NES) which provided the impetus for the present volume. The NES project brought together an international and multi-disciplinary group of researchers concerned with human/environmental security issues from across Europe in order to exchange ideas and facilitate pan-European research in the field. After outlining the political context into which ideas about environmental security were introduced at the European level, Vogler sets out to investigate how the EU has framed the question of environmental security, and to what extent the EU might become involved in environmental security politics. Much of the investigation is pursued in terms of the concept of 'securitisation'.

The relationship between environment and security has generated an enormous amount of interest in the academic community in recent decades. Although the scholarly interest in environmental security issues is truly international, it seems fair to say that the most distinguished contributions to the debate have originated in North America, and particularly in the US. As Richard Matthew argues in his chapter on the North American perspective on human/environmental security, researchers and policymakers in North America have been interested in the linkages between environmental change, conflict and security for over two decades. According to Matthew, the interest in these issues can be traced to research and policy opportunities created by the ending of the Cold War. As Myers (1989) argues, the US has been a fertile environment for scholars on all sides of the environment–security debate. Prominent defenders of the notion of environmental security (such as Norman Myers (1989), Thomas Homer-Dixon (1991) and Robert Kaplan (1996)) as well as prominent sceptics of it (such as Daniel Deudney (1993)) are all based in North America. It seems safe to say, then, that whatever the future of environmental security discourse, this future will be shaped profoundly by developments, and fashions, in American research and scholarship. In his

chapter, Richard Matthew addresses the questions of why the notion of environmental security has generated such a following in North America, as well as what it means for the United States and for the rest of the world. He offers a brief overview of environmental security research and policy activities in North America, a review and assessment of principal areas of controversy and critique, and goes on to defend his own account that situates environmental security scholarship within the context of the unique status of both the US and environmentalism in contemporary world affairs.

Although the bulk of environmental security research being carried out today is being conducted in North America and the European Union, much of the focus of this research is on insecurities within the developing world. The well-being and human security of those belonging to developing countries is consistently undermined by a range of socio-economic and environmental factors which have much less threatening, and subtler, effects in the North. Just some of these factors are overpopulation, human rights abuses, civil war, political oppression, desertification, deforestation, human rights abuses, toxic contamination, soil degradation, pollution and loss of biodiversity. These natural and socio-economic factors represent the most significant threats to sustainable development and human security in the developing world. As Kwasi Nsiah-Gyabaah observes in Chapter 10, the importance of these factors is no more obvious than in the context of Sub-Saharan Africa (SSA), which is not only the poorest region in the world, but also the fastest growing. SSA is an interesting case study for scholars of human/environmental security for a variety of reasons. Many observers hold that it will be an increasingly important region of the world for international relations (Kaplan, 1994). The sheer scale of the environmental problems that the region faces also singles it out as a critical recipient – and test of the usefulness of – the rubric of human/environmental security. Finally, as Gyabaah goes on to argue, recent developments in SSA suggest that some progress towards greater human security might be possible in the future given the appropriate balance of international investment/support, and local-level coordination. As a result, the rather pessimistic audit of environmental and other problems outlined in the early sections of his chapter (concerning, for example, food shortages, declining international investment, deforestation, land degradation, and post-1960s economic stagnation) is mitigated somewhat by other more positive developments such as increasing democratisation and local-level sustainable agriculture initiatives.

The increasing profile of environmental and human security, in both academic and policymaking circles, has been accompanied by a variety of political actors seeking to legitimise policy decisions in their name. Of course, such moves have attracted as much cynicism as they have support. In Chapter 11[1], Oscar Forero and Graham Woodgate pose an interesting question for analysts

of environmental security that builds on this development. In what circumstances, they ask, would it be justifiable for policy elites to appeal to considerations of human/environmental security when the policies they advocate involve large-scale disruption to the lives of the populations of the states they are directed at? They observe that the circumstances, and policies, are unlikely to be similar to those of France's continued nuclear testing in the South Pacific, or the continued bombing of Iraq by NATO forces in February 2001. The articulation of a human/environmental security agenda to justify such actions seems wholly rhetorical, and even a little perverse. Other examples of foreign policy coordination, however, seem potentially more authentic attempts to reduce human insecurity. The authors seek to investigate one such attempt, which concerns the continuing effort to control the drug-trafficking industry in South America. Here, under 'Plan Colombia', a broad range of actions have been devised to reduce the capacity of Colombian cartels to export drugs to the US and elsewhere (one example given is the aerial application of herbicides chosen specifically to eradicate coca crops from large parts of the country, another is the threat of military action against farmers). As the authors argue, Plan Colombia reflects a complex and contradictory mixture of local, national and international initiatives that seek to promote human and environmental security. As they also observe, however, these initiatives are often very unpopular with the local population, seem to exacerbate existing inequities in the region, and are not uniformly effective as weapons against the drugs' cartels. The authors go on to examine the extent to which Plan Colombia, and other initiatives that involve the use of military force, might be justified on human/environmental security grounds and thereby rendered more acceptable to the civil societies of affected countries. This not only leads the authors to ask what the concepts of human/environmental security mean for the indigenous people of Northwest Amazonia, but also to ask what ideological grounds these people (individually and collectively) might accept as legitimating policies such as those mentioned above.

One interesting, and under researched, issue raised by Forero and Woodgate's analysis (and also raised in the earlier chapters by Cocklin and Sage) is the connection between culture on the one hand, and human/environmental security on the other. It is a fairly well-established principle in contemporary liberal political theory that cultural membership is a critical factor in the development and maintenance of a political system which treats people as deserving of equal concern and respect. This is because individuals need to operate within a well-established set of cultural norms and practices in order for them to flourish and act autonomously. To assume otherwise, it is argued, is to presuppose a wholly unrealistic view of human freedom according to which people can make sense of the opportunities they have in life completely free of cultural ties and roles. The reality, so it goes, is that culture and

community provide a 'meaningful context for choice', as Kymlicka has put it (Kymlicka, 1990). Forero and Woodgate provide an illuminating discussion of the way in which cultural and aesthetic beliefs provide the background for the quite sophisticated 'agro-ecological' practices adopted by indigenous Amazonion peoples. They also discuss the way in which the complex political situation in the region has undermined the ability of these peoples to maintain their traditional ways of life. The importance of the Church and environmental conservationists, as well as other socio-economic variables, are highlighted in this regard. Finally, the authors make the interesting observation that these ways of life have developed free of the Western belief in a dichotomy between society and nature. As a result, it is more difficult than ever in this context to separate the discourse of human security on the one side, and environmental security on the other for, as they argue, these peoples 'do not see themselves as distinct from the environment in which they live, they are part of the "world" and in managing it they instinctively manage themselves'. It might strike some as odd, therefore, that policies such as Plan Columbia, which effectively exclude indigenous peoples from the management of lands they have farmed for centuries, can be justified on the grounds that they improve the security of the very people they displace.

As noted in relation to Chris Cocklin's chapter on water and cultural security, the health and well-being of humans and other species is critically dependent on the quality and availability of fresh water supplies. Degraded water stocks are a significant source of mortality and morbidity, particularly in the developing world. Threats to water resources will also have a range of effects on other socio-economic variables that can be expected to affect human well-being for the worse, such as economic development, population migration, political stability and competitiveness. As a result, the risks to public and environmental health stemming from the degradation or depletion of water resources constitute perhaps the greatest contemporary challenge to human/environmental security. One reason for this is that conflicts between users of the resource, and between different uses of it, can produce escalating costs and disturbances that have regional and international consequences. Some of these international consequences, it is argued, will relate to increasing violent conflict and war. Although inter-state competition for fresh water supplies are at their keenest in the Middle East, such competition, and the insecurities it threatens, are global in nature. According to Scheumann and Schiffler, approximately '40% of the world's population live in the watersheds of international rivers' (Scheumann and Schiffler, 1998, p. 1). The overwhelming importance of water as a life-sustaining resource, and the high population densities of communities living adjacent to the major river systems of the world, emphasise the massive potential for violent conflict over fresh water supplies.

It is within this context that Álvaro Fernández-González and associates provide a valuable contribution to the growing literature on water and human (in)security. The focus of this chapter is on the critical role that water resources play in the maintenance of human security in Costa Rica. The authors outline the current state of water resources in the country and go on to sketch some of the implications of the resource for human security, giving examples of the nature of conflicts arising in this context. The main focus of the chapter is on water quality and availability, with reference to three pivotal issues: population dynamics, water resource impacts, and institutional/policy responses. The point of departure of the chapter is the observation that, though water is generally abundant, there are signs that pollution and over-exploitation might pose a serious threat to the country's supplies of fresh water over the coming decades. In particular, they warn that tensions and contradictions will arise as a result of the alternative uses of water as a source and a sink. The authors report that conflicts over water pollution and over-exploitation have provoked a number of legal battles in the nation's courts, as well as tending to follow unconventional, occasionally violent, paths as a consequence of the shortcomings of the country's legal institutions and water management arrangements. They conclude their study with the thought that such conflicts are unlikely to go away given the pressures of future development and population growth.

NOTE

1. At the time this chapter was written three different events, which are of crucial importance to our analysis, had not yet taken place: 1. The terrorist attacks on the World Trade Center, which made explicit the switch from the politics of sustainability to the politics of security in the international globalisation discourse – something we had only discussed theoretically in our chapter, but now seem obvious post-September 11th 2001. 2. In May 2001, after much international pressure, the government of the U.S.A. finally included the rightwing paramilitaries of Colombia on their list of international terrorist groups, although the military actions of Plan Colombia continue to focus on the war against leftwing narco-guerrillas. 3. A revealing in-depth interview with Carlos Castaño, leader of the rightwing paramilitaries in Colombia, has recently been published (Aranguren-Molina M. 2001 "Mi Confesión. Carlos Castaño revela sus secretos". Oveja Negra. Bogotá). Our chapter suggests that an earlier television interview with Castaño represented a manoeuvre in his search for political recognition and national support for his regimen of terror, in the more recent interview this has become self-evident.

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