CRITICAL INTRODUCTIONS TO GEOGRAPHY

Paul Robbins

Political Ecology

Second Edition

Political Ecology

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Political Ecology

A Critical Introduction

Second Edition

Paul Robbins

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Preface to the Second Edition

The seven years between the first edition and this one have made the relevance and urgency of political ecology a difficult thing to determine. On the one hand, the field has grown so dramatically, and in so many directions, that it is even easier to say of this contested enterprise that it has become too diffuse to matter. References to "political ecology" in the Web of Science database have more than doubled in the intervening years but now reflect a huge range of approaches. One might think that political ecology has finally "jumped the shark," a phrase from the television industry suggesting the creative end of a franchise. I am sympathetic with those who may hurriedly wish to get on with the "next thing" as well as those who are still not sure what political ecology is, let alone whether it has a purchase on a special kind of explanation.

And yet if political ecology is no longer relevant, *no one bothered to tell the world*. The horrifying 2004 tsunami revealed structures of vulnerability that demand structural analysis. The summer monsoon of 2010 swept away hundreds of thousands of people in Pakistan, in a floodplain perfectly engineered to reduce the year-to-year hazard of flooding in defense of cash crop production, while increasing the decade-to-decade probability of human tragedy on an unimaginable scale. Areas gazetted for conservation mushroomed in recent years without consensus on how to deal with the displacement of people and loss of productive resources this entails. Mining concessions have ballooned on indigenous land. The world got warmer.

And Hurricane Katrina in 2005 came closer than perhaps any other single event of recent memory to tear back the veil on the structural inequalities of race and class in the United States, which are physically inscribed into the seascape, implicated in the ecological transformation of the coastal zone, and inseparably linked to the technologies that govern the flow of water through the Mississippi delta. That event came *closer*, but clearly not yet close enough. There is simply no way to pass through that obscure barrier without continuing to research, produce videos on, analyze, ecologically track, and mount soap boxes to shout about the swirling political and economic relationships that dialectically produce levees and slums, soils and dams, tourism and hunger, energy and climate, people and things. I am forced to conclude that there is as much or more need for political ecology

now than seven years ago, and the revised version of the book you have in your hands is the result.

Those familiar with the first edition will notice that changes in the book are numerous, but made in a judicious attempt not to throw in the "kitchen sink." I have attempted to update examples but many cases continue to draw on the canon from the field. I have added discussions of emerging traditions, including urban ecology and actor-networks, but not to the detail that they might receive elsewhere. Many new boxes have been added, including key recent works, but necessarily at the expense of some important older work. I have added a chapter (Chapter 7) engaging both land change science and the challenge of causal explanation approaches. I have introduced what I observe as a recent fifth "thesis" in the field, concerning the political-ecological status of non-humans (Chapter 12). But in the largest departure from my original effort, I have tried to stress that political ecology is not a method or a theory, nor even a single perspective. Rather, I suggest, political ecology is an urgent kind of argument or text (or book, or mural, or movie, or blog) that examines winners and losers, is narrated using dialectics, begins and/or ends in a contradiction, and surveys both the status of nature and stories about the status of nature (Chapter 4).

In light of this last revelation, I have tried to resolve the issue that seemed to bother many commentators: the insistence that I am not a political ecologist. I maintain that, insofar as political ecology is the characteristic of a text, one might be a political ecologist only in the same way those who consistently and exclusively write gothic novels might be considered gothic novelists. But this should not encourage any of us – whoever we are or whatever we do – to shy away from researching, reading, writing, and witnessing political ecologies, whenever or wherever it is scientifically enlightening or socially and environmentally urgent. One need not be a political ecologist to mobilize the resources, or learn from the insights, of political ecology.

Many Acknowledgments

Writing requires a rare space that is comfortable and intellectually challenging. I've been lucky to have two such spaces. Thanks to Ohio State University Geography and Larry Brown for my first intellectual home and to University of Arizona Geography and Development, John Paul Jones, and Sallie Marston for my second.

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Most importantly, throughout the whole process Sarah Moore continued to insist not only that the book would eventually get finished (despite my strong doubts) but that at least one person would eventually agree to read it; her comments on and support for my writing have saved a great many confusions and embarrassments over the years (the word "penultimate" means next to last, for example; who knew?). Her knowledge of the politics of waste and consumption was invaluable and her contributions are evident throughout this edition. Having said this, the interpretations and perspectives contained within the book are my own, and I certainly can't lay blame at anyone else's feet for controversial, confusing, or bizarre claims. The reader will have to address any complaints to me.

Paul Robbins, August 2011

Introduction

- The Goals of the Text
- The Rest of the Book

I am standing in a smoldering dumpsite, watching a small army of people disassemble radios. This pile of electronic trash has been dumped in the Agbogbloshie neighborhood of Accra, Ghana, a slum infamous for its role in processing tons of waste that are gathered here from around the world, from baby chairs and truck engines to radios and computers (Figure I.1). Looking across the scene, several somewhat contradictory things pass through my mind.

First, the many violent ecologies of global inequality are on display here. From where I stand, I can smell the pall of smoke rising from a vessel sitting over a small open fire, filled with melting lead, distilled by hand from batteries scavenged from countless devices littering the scene. The smoke, along with that from plastics, as well as rubber from wires burned to recycle the copper within, blackens the faces of the workers bent over these conflagrations and drifts over the scene. It darkens the sky over the nearby neighborhood where children are playing in the streets and where dinner is being prepared in countless open pots. The waterway that separates the worksite from the adjacent sea of informal businesses and housing, assembled in a jumble along its length, is green with sewage. The mountains

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Figure I.1 Residents of a slum in Accra, Ghana, buy, sort, and process hazardous materials and ewaste. Wires are burned and fused while battery lead is melted by hand for resale.

of trash, my hosts explain to me, include huge quantities of materials imported, legally and illegally, into the country. The ecology of the scene is rooted in a far-ranging politics of waste disposal, with unquestionably grim implications for local environments and residents.

It is hard not to notice, however, incredible technical inventiveness, ecological knowledge, and economic innovation on display here as well. Trucks of junk have been directed here by local team-leaders, who bid for access to shipping containers that make their way to the distant dockyards from China and the Americas. These teams together organize labor to disassemble and process the materials for sale to middlemen, whose massive industrial scales are positioned along the perimeter of the dumpsite, awaiting negotiations over prices of copper, lead, and steel. The men at work prying apart circuit boards and stripping components out of relict computers quickly sort materials that can be easily resold or refurbished from those that must be processed. They have a terrific grasp of the workings of the electronics, as well as the obsolescence of its components. The melting of lead is a delicate operation, conducted by people who can sift off materials for match-heads and purify the element to satisfy buyers. This is done with such efficiency, I am told, that the site can make a mountain of computers disappear in months or weeks. Livelihoods are being practiced in this landscape, by people who sometimes lack a grade

school education, but who possess far-ranging knowledge of markets, chemistry, and engineering.[1]

But one more thing is drawn to my attention: the radios are totally unused. As one worker pulls square angles of Styrofoam from their boxes and threads these along a length of twine, it becomes clear that these hundreds of music players have arrived on site encased in the very packaging in which they left their factory in China. This final fact changes the scene in an inexplicable way. Rather than the necessary outcome of contemporary consumer society and an unfortunate inevitability of modern life (someone "has to" process waste after all!), the ingenious workers of Agbogbloshie appear as part of a bizarre engine that maintains a self-replicating worldwide system of over-production. Oceans of organic and inorganic material are drawn from the earth and flow into an enormous feeding machine that re-forms them into myriad configurations (refrigerators, televisions, printers), devours energy in their transportation across the globe, and then summarily dumps them here, unused, in this deadly metabolic intestine of labor. There is Wonderland logic at work here that could only be considered comic if the human and environmental price was not so obviously high.

These three moments point to a convergence of things and people, which raise normative questions of basic justice and fairness, present daunting instances of human genius, and look out onto landscapes of irony and paradox. They are driven by a worldwide engine of economic exchange but reconciled by regional actors and metabolized in local soils and local bodies. They are highly technical problems but ones commanded by formidable systems of indigenous knowledge. They contradictorily suggest grossly unfair outcomes but retain openings for ingenuity and survival. They also demand different kinds of research and theory to fully understand, from the technical assessment of air and waterborne lead particles and the extensive study of electronics markets, to intensive survey of informally constituted local labor systems and institutions of redistribution. This dump might tell a number of interlaced and urgent stories.

This book is an effort to survey these kinds of contending tales and to describe the hard work that underlies researching and telling them well. By introducing *political ecology*, a field that seeks to unravel the political forces at work in environmental access, management, and transformation, I hope to demonstrate the way that politics is inevitably ecological and that ecology is inherently political. But more than this, I intend to show that research in the field can shed light on environmental change and dynamism, thereby addressing not only the practical problems of equity and sustainability, but also basic questions in environmental science.

The normative goal of the book is not over-ambitious. By explaining and constructively exploring the body of research sometimes called political ecology, I intend only to clarify the most persuasive themes in a highly disparate body of writing and show the politics of nature to be both universal and immediate. This, I think, may make a small contribution to helping us all break from an image of a world where the human and the non-human are disconnected, a fiction that remains so stubborn a part of our modern reasoning that it is as difficult to unimagine as it is to picture a world without patriarchy or class.

[1]The intricate details of this economy have been more exhaustively described by Martin Oteng-Ababio in his many articles, including: Oteng-Ababio, M. (2010) E-waste: An emerging challenge to solid waste management in Ghana. *International Development Planning Review*, 32 (2), 191–206.

I believe, however, that an alternative picture, where nature and society are undivided, is as much an act of remembering as one of inventing. Since the popular environmental movement has already done such an admirable job of getting many of us started, it may only be a matter of completing the revolution by rendering it more explicitly political.

It is my hope, therefore, that though this book is aimed at an academic audience, it presents the claims of the field in a plain enough way that picnickers, hikers, and hummingbird watchers can find in it a compelling argument for the way their concerns are implicated in those of working communities, disenfranchised minorities, and subsistence producers around the world. In this sense the book departs from some theoretical and programmatic approaches to the politics of nature, especially those that eschew alliances with traditional environmental movements. This rejection of "bourgeois" environmentalism, a hallmark of some political economic approaches to nature, is both shortsighted and impractical; what more radical challenge to the political economic status quo exists in US law than the Endangered Species Act?

Having said this, it is also my goal to persuade those concerned about the condition of forests, the threat of climate change, and the fate of wild animals that it is no blasphemy to admit that the world is crafted by political forces and human industry, even and especially those dearly held wildernesses that sell so many Sierra Club calendars. At the same time I hope to encourage those concerned with more traditional political economy that an increased sensitivity to the influence (and perhaps even the interests) of non-humans is essential for better politics, explanation, and ethics. The potential power of a popularized political ecology is so great, in fact, that merely shedding a few tightly clasped shibboleths on either side might make way for a very new world, emerging from these dark times when progressive politics in both human and non-human realms seem so painfully paralyzed.

The Goals of the Text

It would be impossible to survey the field of political ecology in its entirety. The contributors are too many, the breadth of topics too vast, and the regional diversity too great. I do not, therefore, intend here to provide exhaustive case studies of political ecological research (see especially Peet and Watts 1996a and Peet, Robbins, and Watts 2010) or a general account of the relationship between science and politics (Forsyth 2003), since this is a task well performed by others. Nor can I place this field and approach within the longer history of geographic science in more than a cursory way, though there are other excellent sources for this (Castree 2005, 2011 (forthcoming)). Neither do I intend to survey the world system as a whole, pointing to the processes, players, and dynamics that are at work politicizing the natural environment. Many excellent books survey the condition of global debt, the position of local producers in commodity markets, and the dwindling power of the state in managing nature (Sheppard et al. 2009 and Bryant and Bailey 1997).

Rather, I intend to do something different here. Whereas most summary texts on the state of global political ecology are designed to show political ecology as a body of knowledge, this book is designed also to show political ecology as *something people do*. And whereas collected volumes highlight a number of separate and distinct cases, this book also gropes for *common questions* that underlie them. Finally, where some work highlights the

field as a specific approach, I suggest instead that it constitutes a *community of practice* and characterizes a *certain kind of text*, albeit an extremely valuable one.

The book is also designed to serve as an introduction and companion volume to the key books, articles, arguments, and research statements that make up the core of the field, and should serve to introduce any interested party to its major works and contested ideas. In this regard, it is offered as a remedy for the purported problem that the field is so fragmented that citation in it, as senior political ecologist Piers Blaikie once remarked, "is largely a random affair."

But more than this, the book is a critical review of the work that goes on in the field, one that advocates a very particular vision of which approaches work and which do not and which lines of inquiry have the most political and analytic power and which do not. In the process, I further hope that the book reveals areas where the field might yet improve its analytical tools. I hope to show, notably, that political ecological analysis and argument have shifted from a focus on the destruction of environments, with a stress on human influences, to a more powerful focus on the production of socio-environments and their co-constitution by many kinds of human and non-human actors. Even so, the book will suggest that there may and must be ways to move "beyond" political ecology or to leverage political ecological texts to better effect. Even while showing the strength of the approach, therefore, the book is written to demonstrate weaknesses, while pointing the way forward towards a more coherent and simultaneously more critical way of doing research.

I will not provide and rehearse, however, the laundry list of more typically pronounced criticisms often made of the field – usually centered on the fact that it is too focused on the broadly defined "underdeveloped world" and that it is too "rural" in character. This is true, but such biases, as discussed here, grow quite inevitably from the professional and intellectual seeds from which the tree of political ecology sprouted – critical development research, peasant studies, environmental history, cultural ecology, and postcolonial theory. We have already seen in the past few years how political ecology has become more symmetrically concerned with the traditionally defined "first world" and urban areas and issues. This change has not guaranteed, however, that its approaches have become more coherent, or that the use of either ecological science or critical deconstruction has been managed with greater rigor. These explanatory problems, I argue, are prior to and more important than the specific topical and regional choices made in research.

The Rest of the Book

The remainder of this book directs itself to describing political ecology as a set of grounded arguments, attempting to show what makes political ecology researchers tick, what makes their work urgent to them, and what useful lessons they have provided for addressing important questions.

In Part I, I describe how political ecology came to be the way it is, with its inherent possibilities and limits. Chapter 1 introduces the term political ecology, distinguishing it from apolitical ecologies of various kinds, and showing a unity of practice amidst much diversity of thought. Chapter 2 reviews the deep roots of this line of inquiry, arguing that political ecologists have been around a very long time. Chapter 3 describes the

historical development of a critical science of the environment, showing the disparate fields and eclectic tools that converged in the last three decades of the twentieth century to give greater analytical form to the field. This chapter is dense with history and referencing, but is intended to be a source to which the reader can return. Chapter 4 draws this opening section to a close to stress the common character of diverse political ecological texts: they stress winners and losers, are narrated with dialectics, begin or end from contradictions, and stress simultaneously the politicized state of the environment and the politicized nature of accounts about the state of the environment.

The three chapters in Part II review challenges to the field from a range of sources. Chapter 5 examines challenges from ecology, and the question of environmental change as environmental degradation or destruction, while Chapter 6 attends to challenges in the way researchers have considered the environment to be imaginary or constructed. Chapter 7 examines other approaches to nature/society study, including those in "land change science" and those from the perspective that stresses "causal" explanation. These approaches are shown to provide useful, indeed critical, lessons for political ecology, while at the same time they continue to reflect and reinforce some problems political ecology has evolved to address.

Part III examines five central theses of political ecological research, each in its own chapter, which I describe as 8) degradation and marginalization, 9) conservation and control, 10) environmental conflict and exclusion, 11) environmental subjects and identity, and 12) political objects and actors. The case materials in each chapter are selected to represent a range of research regions across the world, including cases from the "developed" and "underdeveloped" worlds. The biases of my training and experience will be evident throughout. The research described comes predominantly from the discipline of geography, though it is coupled with work in environmental history, development studies, anthropology, and sociology. While I have tried to include examples from both the global north and south, including cases from North and South America, Africa, and Asia, I have mentioned nothing of Western or Eastern Europe or of Australia. Research and theory in English predominates in the volume, despite the strong parallel threads of Francophone political ecology (Whiteside 2002; see also the forthcoming volume in French by Gautier and Benjaminsen (2012, forthcoming). Referencing of North American work somewhat outweighs that from other places. Finally, numerous international case examples were cut in final editing, owing to a lack of space.

Each of the chapters in this section also includes case histories of how, in my own work, I have tried to do research, and how on many occasions I have been tripped up by hidden pitfalls. These sections only reflect what I have done in research rather than what political ecologists have done more generally, but I think my methodological choices are not unique and the problems I have faced are common not only to political ecology, but to much research in general.

The conclusions in Part IV will critically evaluate the status of the field and point to ways political ecology can expand and improve. My central argument here is that, dominated by a certain kind of argument and rooted in case studies, political ecology needs to reach increasingly both outward to a more synthetic global politics (briefly reflecting on the case of climate change) and inward to a highly immersive form of practice (briefly considering the question of school gardening).

Scattered throughout the text are boxed critical summaries of important individual contributions to political ecology and the people who made them. These are based on my own reading, but wherever possible these also include direct reflections and responses from those authors kind enough to provide them.

The sum of the effort can only be said to give the reader a "feel" for a field of practice that certainly has come to be influential and whose reach has arguably crossed many social and environmental sciences. Curiously, however, for a field of this stature, it seems odd that political ecology is so hard to define! We first must attend to why this might be so.

Part I
What is Political Ecology?

In which eclectic uses of the term "political ecology" are introduced and wherein much divergent research is shown to share an intellectual history, a community of practice, and a certain kind of text. Rather than finding a single body of theory, we discover instead a number of independent trains of thought colliding in the field, leading to a remarkable synthesis in the late twentieth century.

Chapter 1

Political versus Apolitical Ecologies

- What is Political Ecology?
- Five Dominant Narratives in Political Ecology

For many of us who are unable to travel to the plains of East Africa, our images of the region are given life on late-night cable wildlife television, in bold IMAX presentations at natural history museums, or perhaps in the vivid spectacle of Disney's *The Lion King*. The imagined patterns of the "circle of life" in these media – complete with lions, hyenas, and baboons – play out on a yellow-filtered savanna where migrations of wildebeest cross the Serengeti chasing seasonal rainfall, hunted in turn by stoic predators. The scenes are compelling and they inspire in us a justifiable affection for the beauty and complexity of the non-human world around us. These images are also ecologically important, since they give us a picture of connectedness, which is essential to understanding life on the savanna. Across the borderlands of Kenya and Tanzania forage grasses follow rainfall, wildebeest pursue forage, predators pursue wildebeest, scavengers pursue predators, and so on.

The absence of people from these imaginary landscapes seems in no way strange for most of us; these are *natural* landscapes, apparently far from farms, factories, and the depredations of humankind. It is perhaps inevitable, therefore, that an intuitive reaction to the news that wildlife populations are in crisis – including declines in giraffe, topi, buffalo, warthog, gazelle, and eland – is to imagine that the intrusion of humankind into the system is the cause of the problem. Growing populations of impoverished African

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Figure 1.1 Wildebeest crossing the Mara River in Kenya. The migration of wild animals across the region occurs amidst a fully humanized and highly political environment. Photo © Paul Banton / Shutterstock.

people, we might imagine, have contaminated the natural rhythm of the wilderness. Indeed, the sense of loss in contemplating the declining biodiversity and destroyed landscapes may inspire frustration, coupled with a feeling of helplessness; the situation in the Serengeti and the steady march of growing populations seem far beyond the control and influence of life where we live.

Stepping back from the savanna, however, and gazing across the Serengeti–Mara ecosystem both in time and in space, habitat loss and wildlife decline appear more complex and more connected to the daily lives and routines of urban people in the developed world. Cross-border analysis shows that the decline in habitat and wildlife in Kenya is far higher than in Tanzania. Why? Rainfall, human population, and livestock numbers do not differ significantly. Rather, private holdings and investment in export cereal grains on the Kenyan side of the border have led to intensive cropping and the decline of habitat. These cereals are consumed around the world, as part of an increasingly globalized food economy. As Kenya is increasingly linked to these global markets and as pressure on local producers increases, habitat loss is accelerated. Less developed agricultural markets and less fully privatized land tenure systems in Tanzania mean less pressure on wildlife. The wildlife crisis in East Africa is more political and economic than demographic (Homewood et al. 2001).

These facts undermine widely held apolitical views about ecological relations in one of the most high-profile wildlife habitats in the world. They also point to faulty assumptions about the nature of "wild" Africa. Firstly, the image of a Serengeti without people is a fallacious one. The Masai people and their ancestors inhabited the Central Rift Valley for thousands of years before European contact, living in and around wildlife for generations. Indeed, their removal from wildlife park areas has led to violent conflicts (Collett 1987). More generally, the isolation of these places is also a mistaken perception. Export crops from Kenya, including tea and coffee in other parts of

Kenya beyond the Central Rift Valley, continue to find their way to consumers in the first world, even as their global prices fall, constraining producers who must increase production, planting more often and over greater areas, further changing local ecological conditions. With three-quarters of the population in agriculture, economic margins for most Kenyans become tighter every year, and implications for habitat and wildlife more urgent.

The migration of the wildebeest, and its concomitant implications for grasslands and lions, therefore, does not occur outside the influences of a broader political economy. Land tenure laws, which set the terms for land conversion and cash cropping, are made by the Kenyan and Tanzanian states. Commodity markets, which determine prices for Kenyan products and the ever-decreasing margins that drive decisions to cut trees or plant crops, are set on global markets. Money and pressure for wildlife enclosure, which fund the removal of native populations from the land, continue to come largely from multilateral institutions and first-world environmentalists. All of these spheres of activity are further arranged along linked axes of money, influence, and control. They are part of systems of power and influence that, unlike the imagined steady march of the population "explosion," are *tractable to challenge and reform*. They can be fixed.

The difference between this contextual approach and the more traditional way of viewing problems like this is the difference between a *political* and an *apolitical* ecology. This is the difference between identifying broader systems rather than blaming proximate and local forces; between viewing ecological systems as power-laden rather than politically inert; and between taking an explicitly normative approach rather than one that claims the objectivity of disinterest.

When the bottom drops out of the coffee market, as it did in the late summer of 2001, what happens to the peasants who depend upon it and the forests in which it is harvested? When the World Bank helps to fund massive afforestation programs around the world, aimed at preserving tree cover and animal biodiversity, what actually happens to the hill forests designated for enclosure and the tribal people who live there?

These are the questions of political ecology, a field of critical research predicated on the assumption that any tug on the strands of the global web of human–environment linkages reverberates throughout the system as a whole. This burgeoning field has attracted several generations of scholars from the fields of anthropology, forestry, development studies, environmental sociology, environmental history, and geography. Its countless practitioners all query the relationship between economics, politics, and nature but come from varying backgrounds and training. Some are physical scientists (e.g., biologists, geomorphologists, and hydrologists), others are methodological technicians (e.g., geographic information or remote sensing specialists), while most are social and behavioral scientists. All share an interest in the condition of the environment and the people who live and work within it. These researchers, moreover, advocate fundamental changes in the management of nature and the rights of people, directly or indirectly working with state and non-governmental organizations (NGOs) to challenge current conditions. This book reviews the work that these people do, pointing towards the common factors evident in a research area often noted for its diversity, and revealing the strengths and weaknesses in a field that has grown far too quickly to prepare a comprehensive survey or census of its accomplishments and failures.

What is Political Ecology?

The term political ecology is a generous one that embraces a range of definitions. A review of the term from its early use (first used to describe this kind of work by Wolf in 1972) to its most recent manifestations shows important differences in emphasis. Some definitions stress political economy, while others point to more formal political institutions; some stress environmental change, while others emphasize narratives or stories about that change (see Table 1.1). Even so, there seems to be a set of common elements. The many definitions together suggest that political ecology represents an explicit alternative to "apolitical" ecology, that it works from a common set of assumptions, and that it employs a reasonably consistent mode of explanation.

Challenging apolitical ecologies

If there is a political ecology, by implication there must be an apolitical one. As such, research in the field commonly presents its accounts, whether explaining land degradation, local resource conflict, or state conservation failures, as an alternative to other perspectives. The most prominent of these apolitical approaches, which tend to dominate in global conversations surrounding the environment, are "ecoscarcity" and "modernization" accounts.

It is not my intention to provide sustained criticisms of these two approaches here; later chapters of the book should reveal the characteristics of these perspectives and demonstrate their ethical and practical weaknesses. An outline of each should suffice to present their basic arguments, with which readers are probably already very familiar, common as these approaches are to most environmental explanation.

Ecoscarcity and the limits to growth

The dominant contemporary narrative of environmental change and human–environment interaction is a well-established one with a long history. In Western Europe since the late 1700s, when human influence and response to the environment was first submitted to scientific scrutiny, the central driving explanation for social/ecological crisis has been increasing human population, measured in absolute numbers. Following from Thomas Malthus's *Essay on the Principle of Population*, the argument is straightforward: as human populations grow out of proportion to the capacity of the environmental system to support them, there is a crisis both for humans, whose numbers fall through starvation and disease-based mortality, and for nature, whose overused assets are driven past the point of self-renewal. This argument took many forms during the twentieth century, from the "population bomb" of Paul Ehrlich (1968) to the Club of Rome's "Limits to Growth" (Meadows et al. 1972), but its elements are consistent. All hold to the ultimate scarcity of non-human nature and the rapacity of humankind's growing numbers.

For ecoscarcity proponents, this is nowhere a more serious problem than in the under-developed world, where growth rates and absolute numbers of people remain the highest in the world. That the poorest regions of the world are the repositories for what are viewed

Table 1.1 Defining political ecology.

Author/Source	*Definition of "political ecology"*	*Goal*
Cockburn and Ridgeway (1979)	"a useful way of describing the intentions of radical movements in the United States, in Western Europe and in other advanced industrial countries . . . very distant from the original rather sedate operations of the eco-lobby" (p. 3)	Explicate and describe first-world urban and rural environmental degradation from corporate and state mismanagement; document social activism in response.
Blaikie and Brookfield (1987)	"combines the concerns of ecology and a broadly defined political economy. Together this encompasses the constantly shifting dialectic between society and land-based resources, and also within classes and groups within society itself " (p. 17)	Explain environmental change in terms of constrained local and regional production choices within global political economic forces, largely within a third-world and rural context.
Greenberg and Park (1994)	A synthesis of "political economy, with its insistence on the need to link the distribution of power with productive activity and ecological analysis, with its broader vision of bio-environmental relationships" (p. 1)	"Synthesize the central questions asked by the social sciences about the relations between human society, viewed in its bio-cultural-political complexity, and a significantly humanized nature" (p. 1).
Peet and Watts (1996b)	"a confluence between ecologically rooted social science and the principles of political economy" (p. 6)	Locates "movements emerging from the tensions and contradictions of under-production crises, understands the imaginary basis of their oppositions and visions for a better life and the discursive character of their politics, and sees the possibilities for broadening environmental issues into a movement for livelihood entitlements, and social justice" (pp. 38–39).
Hempel (1996)	"the study of interdependence among political units and of interrelationships between political units and their environment . . . concerned with the political consequences of environmental change" (p. 150)	Explore and explain community-level and regional political action in the global sphere, in response to local and regional degradation and scarcity.

Continued

Table 1.1 *Continued*

Author/Source	*Definition of "political ecology"*	*Goal*
Watts (2000)	"to understand the complex relations between nature and society through a careful analysis of what one might call the forms of access and control over resources and their implications for environmental health and sustainable livelihoods" (p. 257)	Explain environmental conflict especially in terms of struggles over "knowledge, power and practice" and "politics, justice and governance"
Stott and Sullivan (2000)	"identified the political circumstances that forced people into activities which caused environmental degradation in the absence of alternative possibilities… involved the query and reframing of accepted environmental narratives, particularly those directed via international environment and development discourses" (p. 4)	"Illustrating the political dimensions of environmental narratives and in deconstructing particular narratives to suggest that accepted ideas of degradation and deterioration may not be simple linear trends that tend to predominate" (p. 5)

as important and scarce environmental goods makes the problem doubly serious. In this way of thinking, the perilous decline of Kenya's wildlife, as described above, can be predicted to follow inevitably from the growth of Kenya's population.

The problems with this line of argument are many. In general terms, and as will be shown throughout this book, the demographic explanation is a consistently weak predictor of environmental crisis and change. Firstly, this is because the mitigating factors of affluence and technology (following Commoner 1988) tend to overwhelm the force of crude numbers. A very few members of the global village consume the majority of its resources. When these factors are considered, overpopulation, to the extent that such a thing exists on a global or regional scale, appears to be a problem strictly of smaller, wealthier populations, especially the United States, rather than the apparently larger populations of the global south (Table 1.2).

The more fundamental problem with this formulation, however, is that it posits the environment as a finite source of basic unchanging and essential elements, which set absolute limits for human action. However intuitive (divide a limited stock of earth materials by a potentially infinite hungry human population and the result always approaches zero), this assumption has proved historically false and conceptually flawed.

Market "optimists," expressing the problem in economic terms, suggest that any form of resource scarcity creates a response that averts serious crisis. As a good becomes scarcer, they suggest, its price tends to rise, which results either in the clever use of substitutes and new technologies to increase efficiency, or in a simple decreased demand for that good. The result is that apparently finite resources are stretched to become infinitely available as

Table 1.2 Who is overpopulated? Comparative per capita consumption of resources and production of waste (World Resources Institute 2010). India is three times larger than the United States, in terms of population, but consumes a comparatively tiny quantity of key resources and produces a fractional amount of waste.

Resource	*India*	*United States*
Meat (kg, 2002)	5	125
Paper (kg, 2005)	5	297
Water (m^3)	633	1,687
Energy (kg oil equivalent, 2005)	514	7,921
Carbon emissions (tonnes, 2005)	1	20

consumers use less and producers supply more efficient alternatives and substitutes (Rees 1990). Even if populations rise on a limited land area, for example, the demand for land and rising land rents will increase its efficiency of use, with more and better production on each unit of land. Even if petroleum becomes scarce, the rising price per barrel will encourage the use of otherwise expensive alternatives like wind and solar power, or simply cause consumers to drive less, endlessly stretching the world's energy supply. While such optimistic prognoses are themselves fraught with problems, they do point to an important and increasingly well-accepted truism: resources are constructed rather than given.

This is not to argue that the number of organisms versus the extent and character of local resources is not an important issue; ask anyone who is in charge of extending water services to suburbs outside of Denver or Phoenix. To be sure, the number of people who use trees, food, water, metals, and other materials in part determines proximate demands on the environment. So too, the adaptation of natural systems to meet changing needs, whether driven by absolute numbers or changing consumption patterns, is an important element of human–environment interactions. Even so, the Malthusian population pressure model poorly reflects the complexity of global ecology. The argument does, however, hold serious implications for the use and management of resources.

When it was first offered up in Malthus's 1793 formulation, the ecoscarcity argument was presented as an explicit justification for social policy. In particular, Malthus insisted that since famine and starvation were essential to controlling runaway human populations, such events are "natural" and inevitable. England's Poor Laws, the modest redistributive welfare subsidies to feed the most marginal groups, were pointless and counter-environmental. By increasing rather than decreasing their numbers, such subsidies were the source not the solution of misery. So too, in such a conceptualization, the crisis for the poor lay not in the larger economy or ecology of their subsistence, but instead in and amongst the poor themselves: "In searching for objects of accusation, [the poor man] never adverts to the quarter from which all his misfortunes originate. The last person he would think of accusing is himself, on whom, in fact, the whole blame lies" (Malthus 1992, book 4, ch. 3, p. 227).

The implications for contemporary global environmentalism are equally programmatic. Environmental crises as demographic problems exist at the site of resource use, in and

amongst the world's poor, who are simply too numerous. Subsidies of the poor do little to alleviate the crisis, since they only serve to reinforce the demographic trend. Population control, rather than reconfiguration of global distributions of power and goods, is the solution to ecological crisis. The continued advocacy of an apolitical natural-limits argument, therefore, is implicitly *political*, since it holds implications for the distribution and control of resources.

Demographic explanations of environmental change have become considerably more sophisticated than those outlined by Malthus and the Club of Rome. Attention to high-density urban development and the associated energy costs and infrastructure demands of megacities has created justifiably renewed attention to population as an important driver for environmental change. More recent research has come to demonstrate that the position of women in the workforce and their increased access to decision-making, calories, and education are closely linked not only to changing environmental conditions but also to decreased fertility and population growth. New approaches have come to redefine our ways of thinking about population, power, and environment. Even so, crude Malthusianism regrettably remains a typical way of thinking about environmental change, and so provides a unifying target for many political ecologists.

Other apolitical ecologies: Diffusion, valuation, and modernization

Other prominent accounts of environmental change also dominate current thinking, asserting apolitical answers to extremely political questions. It is commonly argued, for example, that ecological problems and crises throughout the world are the result of inadequate adoption and implementation of "modern" economic techniques of management, exploitation, and conservation. Generally, this way of thinking is underpinned by a commitment to economic efficiency.

These approaches to environmental management and ecological change generally assert that efficient solutions, determined in optimal economic terms, can create "win–win" outcomes where economic growth (sometimes termed "development") can occur alongside environmental conservation, simply by getting the prices and techniques right. Such approaches are persuasive, at least insofar as they reject the cataclysmic prognoses of Malthusian catastrophe described above. The assertion that economic efficiency pays environmental dividends is further supported by many examples over the recent period of industrial technological change. The historically dirty pulp and paper industry, in a prominent example, has simultaneously increased profit margins and decreased emissions through efficient industrial ecological practices (Pento 1999). By freeing individuals and firms to seek their own best and most efficient use of resources, propelled by competition on an open market and sustained by modern technology, waste, environmental destruction, and resource degradation can be tamed. Moreover, the sometimes perverse influence of strong state bureaucracies over the environment is perhaps avoided through market- and technology-based solutions.

For global ecology, such an approach suggests several general principles and policies. (1) Western/northern technology and techniques need to be diffused outwards to the underdeveloped world. (2) Firms and individuals must be connected to larger markets and given more exclusive property controls over environmental resources (e.g., land, air, wildlife). (3) For wilderness and biodiversity conservation, the benefits of these efficiencies