Introduction

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Learning Goals

After reading this chapter, you will be able to:

- Define fundamental geographic concepts like globalization, spatial scale, and environmental determinism.
- Illustrate how fundamental concepts in geography aid in evaluating contemporary human-environment issues.
- Explain how the organizational structure of this book can contribute to your learning of contemporary human-environment processes, patterns, issues, and potential solutions.

Has our drive to build an advanced global civilization exhausted our planet’s resources and polluted our planet to such a degree that we are in fact destroying the very civilization we are trying to build? Does our example explain why we have not located any evidence for life elsewhere? Are we an example of the Fermi paradox and the Great Filter where the Great Filter is an abiogenesis? In other words, is the rise of technological human-level intelligence ultimately self-destructive before we make contact with other alien civilizations? If so, then Gene Roddenberry, the creator of Star Trek, would be very depressed!

We hope not, and tragic major global crises such as the global economic crisis of 2007/2008, SARS, and COVID-19 suggest that downturns in the global economy yield positive environmental impacts! For instance, as of March 2020, nitrate oxide levels in China and within the Po Valley of Italy are down as much as 10–30%. As of March 27, congestion in and around Los Angeles is down and the traffic is moving 53% faster. Indeed, according to the Environmental Protection Agency’s (EPA’s) air quality index, by the end of March 2020, Los Angeles had recorded three straight weeks of “Good” air quality, which indicates little to no risks of air pollution. Contrast this with summer 2019, when EPA’s air quality index in LA was in the “Unhealthy” range or worse every day for two straight months. Similarly, in the San Francisco Bay Area, air quality has improved markedly, with the number of vehicles crossing the Bay Bridge having dropped 40%, as has the number of vehicles driving into Seattle, Chicago, and Atlanta have seen similar trends, with massive downturns in numbers of vehicles on the roads.

Please note we do not advocate for emergent diseases and are horrified by the death toll of COVID-19.

Yet, this does illustrate that as people stay at home, consumption decreases, factory outputs decrease, transportation (including shipping, but also individual car drivers, trucks, etc.) decreases, and with this there is significant reduction in air pollution and greenhouse gas (GHG) emissions. We hope, from this evidence, that people (especially rich people) realize that reducing personal consumption (by a relatively small amount) can have an immediate impact on GHG emissions, and that we should, as a global society, explore zero-growth policies coupled with concerted efforts to reduce local, regional, national, and global socioeconomic inequalities.

As we noted in the last sentence, the onus is really on rich people to change their consumption patterns, particularly when it comes to flying. Oswald and coauthors
(2020) found that the richest 10% of people consume 20 times more energy than the poorest tenth in each region and across the globe. In fact, the richest 10% consume 187 times more fuel when traveling than the poorest tenth, wherever they live, and as they become richer, they use more energy in heating/cooling their homes, traveling, shopping, and eating. According to Harrabin (2020), in the United Kingdom (UK), 15% of flyers fly 70% of all flights, yet 57% of UK citizens do not fly abroad! Oswald and coauthors found that 20% of the UK population, 40% of the German population, and all Luxembourg citizens are among the top 5% of global fuel users. But, contrary to popular expectations, only 2% of the Chinese population and only 0.02% of the Indian population are among the top 5% of global fuel users.

In this chapter, we have several challenges—identify the scope of this project, from there define nature, define what are human-environment issues, define the Anthropocene, and begin to illustrate the connections between globalization, the defining attribute of our global society, and global environmental change, the defining by-product of our global society.

1.1 Anthropocene and Omnicide

Today, we live in the Anthropocene, an era dominated by humans, but also by the positive yet destructive environmental feedbacks that are poised to completely reset the relationships between nature and society! But what is the Anthropocene?

» With world population projected to reach at least 9 billion by 2050, human interactions with landscapes are increasing at unprecedented rates. Indeed, the environmental impacts of human population growth and accompanying resource consumption have intensified to the extent that the term ‘anthropocene’ has emerged to signify a new geologic era dominated by human activity.

» The Future of Human-Landscape Interactions (AAG Newsletter, Dec 2010), Ann Chin and Carol Harden

Temporally constraining the Anthropocene has proved difficult. According to Waters et al. (2018), the Anthropocene Working Group representing the American Geosciences Institute and earth scientists worldwide is suggesting the “golden spike” in radioactive nuclear fallout and changes in carbon chemistry through fossil fuel burning between 1952 and 1955 should stratigraphically define the new Anthropocene epoch. Carrington (2016) suggests that other proposed Anthropocene stratigraphic signals might include the presence of plastic pollution, coal soot from power stations, concrete and concrete dust, and domestic chicken bones in rubbish dumps and kitchen hearths.

Chin and Harden continue by posing a series of questions related to the human and physical dimensions of landscape change, including:
What are the unintended and broader social and political consequences of landscape change, especially when a small change in landscape processes can produce large social change, and vice versa? What common currency can express the value of environmental goods and services, and relate environmental systems to economic and political systems?

While agreeing with their premise, we take issue with the authors’ privileging of population growth and their omission of the immense diversity of resource consumption and technological access across the globe. However, we would be derelict if we did not mention that between 1990 and 2010, globalization, capitalism, and market socialism (China’s model of growth) helped more than a billion people out of poverty. But these three systems might have reached their zenith. Increasing use of technology in the Global North in manufacturing, product delivery, and services will likely cause 47% job losses among the middle and working classes in the next 25 years according to Frey and Osborne (2017). This at a time when middle- and working-class wages have stagnated; for instance, 15% of the US population today exists below the poverty-line, while all productivity gains have accrued to the top 1% of earners.

However, the utilization of space by humans or the lack of space for other species is certainly an issue. Sir Richard Attenborough states, “space is not as sexy as plastic, it’s a harder thing to get your head around, it’s a much bigger issue.” For instance, blue whales are struggling to find partners because the noise of the oceans is drowning out their songs, so their ability to communicate and find each other over vast distances is diminishing. By 2050, 10% of all animal and plant species or a million species are expected to go extinct according to Chris Thomas and co-authors (2014). Among the first to go are those animals larger than 100 kg; these include elephants, rhinos, giraffes, lions, tigers, many whale species, blue-fin tuna, orangutans, and most shark species, among many others. All these species require significant landscape or space to survive. Today’s current extinction rate is at least 1000 times faster than the background extinction rate since the Chicxulub event 66.043 ± 0.011 million years ago.

Yet space is not the only pressing issue. Business-as-normal is consuming all earth’s natural resources (i.e., minerals, timber, soil, freshwater and groundwater, clean air) and generating enormous pollution, of which one form, GHGs, is conspiring to unnaturally warm our earth to levels not seen in millions of years. This at a time when urbanization is accelerating! And yet according to Felix Creutzig and coauthors (2015), urban areas consume more energy, spread more diseases, consume more water, and generate more trash and more GHGs than rural environments.

Both Frank Fenner and Jared Diamond liken our spiraling descent into chaos triggered by global warming, business-as-usual resource consumption, and loss of natural landscape space as reminiscent of Easter Island. Both are worried that humans “lost in space” will perish! Both are worried that competition for the last remaining natural resources, for example, water and soil, will trigger wars over food and water!

Furthermore, we would augment these passages by noting the severity of humans’ impact on the environment, where some instances of environmental deg-
radiation have reached their thresholds, such that the extent and severity of the impacts may prove to be irreversible. In addition, physical and human-driven processes work in tandem to produce the constantly changing landscapes that Chin and Harden identify, and the scope and extent of such drivers remain difficult to predict precisely because of such complex interactions. Moreover, those processes operating at a global scale result in geographically uneven consequences for both societies and physical environments, such that places and peoples neither contribute to nor are affected by environmental impacts equally.

Although the term Anthropocene captures the essence of our era, it tends to camouflage a sinister reality—we are all of us, at different scales and different rates but especially Global Northern citizens, culpable of “ecocide” or rather “omnicide”! We prefer the term omnicide to ecocide, the killing of ecosystems, as ecocide is spatially more restricted in interpretation.

Omnicide—the killing of everything is global in its reach. We have actively and passively conspired to create conditions in which our modern highly interconnected, highly wasteful, highly resource-exploitive global civilization is initiating the sixth mass die-off or sixth mass extinction. As Danielle Celermajer suggests, we are not just killing animals, trees, fungi, biomes, forests, and rivers, we are also killing humans through pollution and natural resource exhaustion.

According to Danielle Celermajer, and we concur, we need to identify the political representatives, the media representatives, the financial institutions, the businesses, the governments, and individuals who are, at whatever geographic scale, facilitating and are culpable for omnicide of the earth. We as citizens and as scientists must not hide or be quiet anymore; we must remember Elie Wiesel’s quote about the Holocaust and apply it to our modern context and change it subtly:

- We must always take sides. Neutrality helps the polluter, the natural resource exploiter never the natural environment. Silence encourages the environmental abuser.

This is why environmental abusers, governments and businesses alike, target the likes of Sweden’s teenage climate activist Greta Thunberg and others.

Thus, a more explicit integration of human-driven and physical processes coupled with careful attention to issues of geographical scale, environmental thresholds, and geographical unevenness potentially provides a comprehensive and sophisticated depiction of human-environment interactions in the twenty-first century. Such an integrative approach that draws on fundamental geographic concepts to represent and analyze the complexities involved in the production and impacts of human-landscape processes that mosaic the earth’s surface provides a framework for this book.
1.2 Geographic and Environmental Concepts

At first glance, “nature” may seem a fairly obvious, self-evident concept that lends itself to a simple definition.

Nature is frequently defined or understood differently across societies or cultures, leading to a conception of nature as socially constructed. Such a perspective highlights the ways in which a given society’s views of nature impact issues of resource management, development, environmental policy-making, and a whole host of other components that shape the human-environment mosaics that pattern the globe.

Moreover, fundamental concepts from geography such as geographical scale, boundaries, and environmental determinism are essential to building a knowledge base necessary to critically analyze human-environment interactions.

Within geography, intellectual spaces and subject domains have been articulated around nature-society and human geography, and human-environment and physical geography, with some overlap with GIScience.

The principle themes associated with human-environment studies are the dynamics of coupled human-environment interactions, land-use and land-cover change, and the resilience and vulnerability of social-ecological systems. Whereas the principal themes of nature-society studies (NS) involve environmental governance, environmental history, and environmental management and policy construction.

There is a growing consensus among social scientists that all knowledge is produced within distinctive social and cultural contexts that invariably influence and condition the process, and by extension the application, of new knowledge in policy arenas. The Aboriginal Indigenous Engagement Model conceptualized and implemented by a consortium of the CRC Plant Biosecurity (PBCRC), now The Australian Plant Science Foundation (APBSF), The New Zealand Institute for Plant and Food Research, and Charles Darwin University is just such an attempt to involve social and culture contexts in policy engagement and environmental management. This model draws parallels between the traditional processing of cycad seeds and effective and inclusive community engagement.

Furthermore, in the past, natural scientists and/or environmentalists used their privileged positions to propose environmental policies with little regard to the cultural, social, political, and economic characteristics of human societies. Recently, this has begun to change. For example, since 1998, the American Association for the Advancement of Science has supported interdisciplinary research as the means to solve the complex problems that earth faces in the twenty-first century. Natural
scientists have been, until recently, less inclined than social scientists to engage with this approach, focusing instead on collaborative environmental assessment projects undertaken with governmental and private agencies. The recommendations and outcomes of such projects often face fierce criticism because of divergent viewpoints over the appropriate management of natural resources and landscapes. Perhaps of most concern, the public often fails to appreciate the scientific culture within which such projects are conducted. It is our contention that geographers, landscape and political ecologists, and political economists, among many others, can begin to overcome this unfortunate disconnect between the public and natural science arenas by applying concepts from multiple social science disciplines to engage the public in a more diverse and reflexive form of scientific practice and environmental management. It is within this academic and social context that we address today’s complex mosaic of human-environment interactions.

Fundamentally, the interactions among humans and the environment occur across space and time. Thus, the resulting rich and spatially varied mosaic of human-landscape products we see today exists as the sum of modern and historic political, social, and cultural processes and physical landscape responses. Things happen, they happen across the earth’s surface, and humans both affect and are affected by physical landscapes. Yet different cultural and social groups, political and economic entities view, react to, and thus impact the human-environment processes differently. Therefore, although historical legacies of past human and environmental interactions remain today, it is the spatial representation of these historic interactions and the extant contested interplay between humans and nature that lie at the heart of this relationship. Thus, our interdisciplinary approach to writing this book involves positioning political ecology within a spatial dimension.

1.3 Nature as Socially Constructed

“It is a paradox of our modern time that” the “immense success of science is being questioned… Science is faulted for its privileged status”; moreover, “scientists are subject to the same pragmatic principle that governs other members of society: It does not matter whether an idea or concern of people is real or not; if people believe it is real, then it will be real in its consequences. The present state of ‘science literacy’ among the potential believers of our society does not give comfort that their reasoned understanding of science will thwart any adverse consequence of current antiscientific trends.” Baker, V.R. “Let Earth Speak,” pages 359–367 in The Earth Around Us: Maintaining a Livable Planet, edited by Jill S. Schneiderman. W. H. Freeman and Co. (2000).

This warning, equally concerning to physicists, biologists, atmospheric scientists, geologists, and physical geographers, is very apt today. Yet this warning should be extended to include a warning about deconstruction theory and its use to devalue or reject scientific methodology, scientific results, and recommendations originating from these results.
Deconstruction theory suggests that any given text has irreconcilably contradictory meanings, rather than being a unified, logical whole.

Deconstruction criticism of science is alarming, but it is particularly worrying that most climatologists, physical geographers, physicists, chemists, and geologists are neither aware of this issue nor have seemingly much to offer to rebuff deconstruction criticism of their work. It is all the more worrying because, in recent years, Nellis argues that geographers (both physical and human) have been called to “play a more active role in information management at all levels and related geographic policy,” and as Richardson notes, geographers have been encouraged to “emphasize unity, inclusion and the common ground within our discipline.” Richardson goes further and states that “We must learn to work effectively within groups with divergent viewpoints, and to focus on consensus building and inclusion of disparate perspectives.”

Within biology, Soule and Lease have tried to alert biologists to the severity of the problem presented by deconstruction theory and its application to the biological sciences. All physical and social scientists cannot simply ignore these threats; we must understand the nature of these threats, develop arguments to counter them, and be ready to counter deconstructionist arguments to college administrators and the public. We cannot continue to keep our heads firmly embedded in the sand, even if the sand does have some rather interesting and unusual cross-beds in it!

1.4 Semantic Challenges to Nature and Society

Beginning in the late twentieth century, postmodernists levied criticism on the entire range of practices and epistemologies (i.e., means of knowledge production) in academia. Some fields of study, however, were quicker to respond to these criticisms than others. Scholars in cultural studies, literary criticism, sociology, and ethnography attempted early on to integrate postmodern ideas into their fields, which led to new, stimulating arguments regarding the production of knowledge and the importance of alternative rationalities. Natural scientists, by contrast, have been much less inclined to engage in the debate, although a number of biologists recently generated an articulate first response to postmodern assessments of scientific inquiry. Physical geographers have a tradition of privileging fieldwork and codified methods of analysis over reflection and philosophical exploration. With a few notable exceptions, the subfield has simply chosen not to participate in the discussion and focus instead on collaborative environmental assessment projects undertaken with governmental and private agencies. The recommendations and outcomes of such projects often face fierce criticism because of divergent viewpoints over the appropriate management of natural resources and landscapes. In addition, the public often fails to appreciate the scientific culture within which the projects are conducted.
Postmodernism is not a singular critique or philosophical position. Indeed, some have argued that it is inappropriate to use the broad label “postmodernism” at all because its practitioners resist all forms of classification. Clearly, though, several thematic patterns can be said to characterize most postmodern literature.

At root, postmodernism is a critique of language. Modernity assumed a phenomenological separation of subject from object, mind from matter.

The natural world, moreover, possessed an intrinsic order that could be discovered through the deductive process of observation, abstraction, empirical testing, and theory construction. In all of this, it was assumed that the system of abstraction—language itself—was stable, fixed, and consequently reliable. Indeed, a highly refined system of abstraction, mathematics, was always seen as the essential tool in deciphering the intrinsic order of the natural world.

Postmodernism, by contrast, denies the possibility of a singular truth. Its practitioners underscore the unstable and accidental nature of the relationship between signifier and signified. The meaning of a word does not depend upon the external object it signifies, but rather exists only in reference to other words and signs in a chaotic and ultimately incomprehensible relationship. Language, then, cannot provide direct or unproblematic access to reality, but rather shapes reality within the confines of its own conventions and practices; all independent of a postulated “real” world “out there.”

Consequently, the entire Cartesian dichotomy between a rational subject and an external, but ultimately knowable, world is pure illusion. The individual is the unstable product of a hyper-relative practice of signifying an infinite regress; most postmodernists question the coherent individual and prefer to speak of multiple subjectivities or polymorphic subjects. The convention of “truth” is society’s way of stopping the infinite regress of language to make sense of the world, if only partially and temporarily. Postmodern critics readily observe, however, that modern society universalizes such half-truths into absolute statements. The production of truth, then, requires the constant application of social power to silence alternative views and to make linguistic apparitions appear as unquestioned common sense, a taken-for-granted dimension of everyday experience. For this reason, postmodernism conceives of truth as a fiction backed by power, a form of terrorism designed to maintain the position of those whose interests it serves.

Most of these assertions anger physical scientists, whose work is premised on the practice of generating valid and reliable knowledge about the natural world. The tendency is to dismiss the entire critique as specious and unfounded. How can postmodernists make assertions about the illusory nature of truth when they them-
selves contend that language prohibits the very act of making such strong declarations? But, the postmodernist case is much more nuanced than usually perceived. In fact, it is possible to recognize two broad, although not exclusive, camps: skeptical postmodernists and affirmative postmodernists.

Skeptical postmodernists are known for the outrageous arguments outlined earlier regarding the hyper-relativity of knowledge and the terrorism of truth. Many skeptics would renounce the validity (and authorship!) of their own work, and in fact routinely make contradictory arguments, sometimes within a single text or interview.

Some of the most extreme skeptics have written themselves into obscurity and disdain, most notably the founder of the technique of deconstruction, Jacques Derrida.

The affirmative position, by contrast, offers much more promise for positively modifying the processes whereby knowledge is produced, in order to better incorporate diversity, innovation, and alternative viewpoints. The affirmative view maintains a basic form of the earlier argument that pure, universalized truth is impossible, and that truth claims are made by marshaling and appealing to the structures and relations of social power. But affirmative postmodernists refuse to accept the idea that all knowledge is completely fallacious, and that we can never know anything.

Affirmative postmodernists generally contend that all knowledge is produced within distinctive social contexts that invariably influence and condition the process.

So, although it is inappropriate to seek absolute, universal truth, it is possible to create partial, diverse, and conditionally valid truths that, taken together and played off one another, provide a rather generous and ultimately collective understanding of our social and physical environs.

1.5 Spatial Scales and Boundaries

The adjective “spatial” comes from the root word “space,” and spatial scale is a fundamental concept in the discipline of geography with myriad definitions and conceptualizations. Indeed, academic geographers have debated the conceptualization, origin, and utility of spatial scale for decades, and many of those conversations continue today. Notwithstanding these ongoing discussions, spatial scale remains a useful concept in examining human-environment interactions, environmental issues, and environmental policies.
Spatial scales are a means of organizing geographic space, frequently by dividing it into levels or portions of varying size. For example, the global scale refers to the entire earth, including all physical processes (e.g., surficial and atmospheric) and human-driven processes (e.g., demographic, cultural, and economic) contained therein.

For our purposes, the global scale would be the largest, most expansive spatial scale, within which we might identify smaller portions of geographic space (i.e., smaller spatial scales). World regions, such as East Asia, sub-Saharan Africa, and South America, for instance, exemplify a different spatial scale than the global since they refer to only a portion of the entire earth. As we continue to “zoom in” from the global scale (like you might do on your mobile phone), we alter the spatial scale at which we are viewing the earth. Sticking with the zooming in metaphor, these smaller and smaller portions of the earth enable us to see more detail, all the way down to the household scale or (theoretically) the scale of the body (although your phone app obviously is not powerful enough to zoom in that far). Thus, spatial scale is a way of conceptualizing and organizing geographic space as we zoom in or zoom out. Common examples of spatial scales would include the following (although this is by no means an exhaustive list): global, world regional, national, intra-national/regional (e.g., the northern India or the US South), urban (i.e., the city), neighborhood, household, and the body. Note that each one of these examples of spatial scales is a smaller area than the previous one, as we are continuing to “zoom in” on the earth.

Geographer Andrew Herod has written extensively on spatial scale, and his work illustrates the common understanding of the origin of spatial scale. Herod’s research, and that of many other geographers, demonstrates that spatial scales are socially constructed and dynamic rather than natural and fixed. What does it mean to say that spatial scales are socially constructed? A historical example might help illustrate. Today, we refer to the national scale to represent processes originating from and/or affecting a country. For instance, when we compare annual greenhouse gas emissions of the United States to those of China, we are examining data at the national scale (note that although China emits more greenhouse gases each year than does the USA, this is a function of population. On a per capita [i.e., per person] basis, the USA is a much bigger emitter of GHGs than China). Yet, for most of human history, there was no such political entity as a “country,” and thus no such thing as the national scale (think, the Roman Empire, the Mughal Empire that dominated current-day South Asia throughout much of the sixteenth to nineteenth centuries, or even the imaginary kingdoms in Game of Thrones). Countries have become such a common means of organizing space on the basis of sovereign political control, that they may seem natural and concrete. However, the concept of the country (or state in political geography terms) has only existed for approximately 400 years, a long time to be sure, but only a small piece of human history. We can say the same thing for the urban scale or the spatial scale of the neighbor-
hood. Not all cities or neighborhoods are the same size and they do not stay the same over time. This illustrates how spatial scales are socially constructed and impacted by geographic and historical contexts; that is, what counts as the urban, neighborhood, or national scale (or whether these even exist!) depends on when and where we are. Spatial scales, therefore, are not an arbitrary, artificial framework for dividing up geographic space that is simply overlaid on the earth’s surface, like a grid of smaller and smaller squares that might be placed on a globe. Instead, spatial scales are defined and delineated according to human or physical processes that exist in the world and act upon space (e.g., neighborhoods, cities, regions, or countries).

In addition to recognizing that spatial scales are dynamic and fluid, some familiarity with a few metaphors is helpful in understanding how spatial scale is utilized throughout this book. The first metaphor is that of a ladder, wherein larger scales are the top rungs of the ladder (global, world regional, national, etc.) and spatial scales get smaller as we move to a ladder’s lower rungs. This metaphor is helpful in some ways and misleading in others. One critique is that it fails to highlight the interconnections between scales, while also privileging the larger scales over the smaller (since they are higher up on the ladder). Think for a moment about your neighborhood; notwithstanding its uniqueness, is it not still part of the urban, regional, and national scales? Of course it is; we cannot separate it from the larger spatial scales within which it is apart. One spatial scale is not distinct or separate from other scales, but embedded within them. Hence, a concentric circles metaphor (one circle surrounded by a series of larger and larger circles) may be more helpful in envisioning the concept of spatial scales. One final metaphor that geographers turn to regarding scales is that of matryoshka dolls (more commonly known as “Russian nested dolls”). These wooden dolls are a series of identical dolls of various sizes, such that one fits inside another and those fit inside a larger doll until all of the dolls fit inside the largest one. This nested doll metaphor is helpful in reminding us that all spatial scales from the local to the global are intimately connected to each other. It is also worth noting that the smallest doll (i.e., the smallest scale) is not necessarily the least significant.

Related to socially constructed spatial scales, the term endemism illustrates the confusion that human-delineated spaces versus more organically derived space can present.

An endemic is broadly defined as range-restricted species.

Until recently, endemics were identified at the national scale—for instance, Ecuador has 6 bird species restricted to mainland Ecuador and 30 restricted to the Galapagos Islands. However, Birdlife International introduced a more inclusive and ecologically appropriate term, Endemic Bird Areas (EBAs). EBAs contain habitats where
multiple restricted-range bird species (those species restricted to less than 50,000 km²) uniquely occur. The Chocó EBA that includes portions of Ecuador, Colombia, and Panama has 62 endemic bird species, and to illustrate the EBAs greater worth, 210 endemic amphibians, 63 endemic reptiles, and maybe as many as 1600 endemic plant species.

Spatial scales and human boundaries are also not necessarily restrictive. Cultural and socioeconomic processes frequently jump scales, such that local environmental issues can become regional or national or international. The 1997 proposal to create another oil pipeline across the Andes, from the Amazon to the Pacific in Ecuador, mobilized local activists who sought help from regional, national, and international organizations to first stop the pipeline, and then reroute it away from the Chocó EBA and the newly identified Mindo Important Bird Area (IBA). The Mindo IBA was created by Birdlife International as a reaction to the proposed pipeline route. The San Francisco Chronicle even carried an article titled Pipeline through paradise. Oil route across Ecuador’s cloud forest threatens birds -- and ecotourism. Ultimately, the pipeline was finished in 2002, but Mindo became even more well known. As one long-time environmental activist explained, “A bad thing became a good thing.” He continued, “Mindo became a model for Ecuadorians to conserve nature, a model about birding, a model about how local people can work on these issues---you can ask everybody in town and everybody can tell you something about conservation.”

Thus, spatial boundaries can be at the forefront of environmental conflicts as another recent historical example illustrates. In 1975, Iceland established a 200-mile exclusion zone to try to conserve their cod fishery. The UK responded that all ocean resources 3 miles beyond any coastline are a common resource to be shared by all. The UK sent Her Majesties’ Navy to protect the rights of UK fishing vessels within the 200-mile zone. Iceland responded by arming coast guard vessels with fishing trawl cutters and cutting trawler nets and firing across and in front of trawlers to try and turn them back. The Cod War ultimately led the UN to embrace a 200-mile exclusive economic zone for all countries possessing an ocean coastline.

In conclusion, we employ the concept of spatial scale throughout this book to assist in achieving a number of goals. Among these are using spatial scale to examine ecological processes and environmental impacts across space, to illustrate the “mismatch” between spatial scales socially constructed by human activity and spatial scales constructed via ecological or biological processes (e.g., the Endemic Bird Area), and to highlight examples of how “jumping scale” or “scaling up” have affected environmental movements and/or policies.
1.6 Environmental Determinism

This deeply racist philosophy argued that the physical environment predestined societies toward particular socioeconomic and cultural trajectories. In short, physical characteristics, especially climate, determined culture and society.

This deterministic approach is a far cry from the suggestion that the physical environment in some way shapes culture (e.g., climate and soil types impact agricultural practices).

The idea that nature affects culture is an illustration of possibilism; that is, given a certain set of environmental factors, a multitude of cultural outcomes is possible. Thus, possibilism should not be confused with determinism.

In a nutshell, environmental determinism concluded that mid-latitude environments with their highly variable weather created a rich learning environment, while polar and tropical environments with their highly predictable and unvarying climates did the opposite. This philosophy was a product of Judeo-Christian and colonialist mentalities, and it has no basis in fact.

1.7 Environmentalism

In a modern sense, the battle between Gifford Pinchot (first chief of the US Forest Service) and conservation and John Muir and preservation in the USA led Aldo Leopold to consider a more inclusive land ethic. This is widely believed to have heralded the beginning of environmentalism. Leopold thought that ethics direct individuals to cooperate with each other for the mutual benefit of all. He argued that this “community” should be enlarged to include nonhuman elements such as soils, water, plants, and animals, “or collectively: the land.” Although the release of the 1949 Sand County Almanac launched the land ethic, the modern contemporary American environmental movement did not emerge until Rachel Carson published Silent Spring in 1962 that identified to a broad audience the link between DDT and harmful trophic cascades. The Tragedy of the Commons published by Garrett Hardin in 1968 identified where individuals using a common resource for their own personal gain degrade the common resource, leading to a decrease in yield for both the group and the individual. Among the many tragedy of the commons examples are tuna fishing, point-source polluting of air and water, and utilization of common pastureland. In the 1970s, Animal Liberation by Singer
challenged human use of animals for pharmaceutical testing and human consump-
tion, while Næss’ Deep Ecology established the contemporary ecological philoso-
phy that all living things have inherent worth, while emphasizing the interdependence
of organisms within ecosystems. Today, ecosystem services and ecofeminism are
the buzzwords of environmental movements.

Ecosystem services are those cultural-socioeconomic benefits that people obtain
from ecosystems. Without support, provisioning, regulating, and cultural services
from ecosystems, humans and our civilization would cease to exist.

Ecofeminists argue Western culture oppresses and subordinates both women and
nature, suggesting men rank higher than women and culture is more important
than nature.

Approach
The book is divided into three broad sections: Section I, the Issues and Challenges of
Climate Change, threshold exceedance and the sixth mass extinction; Section II, the
Settings that contribute to Section I—population, agriculture, and resource deple-
tion; and Section III, our take on Practical Solutions to our Human-Environment
Crises. After providing students with some fundamental tools in geography and envi-
ronmental science, the text moves to an examination of several issues and challenges
that have arisen as a result of human-environment relations and concludes with a
discussion of multiple approaches to addressing the challenges highlighted in Sections
I and II. Our approach to teaching about human-environment relations draws on the
synergistic nature of this field in the organizational framework of the text.

As a specific organizational theme, we interweave discussions of human-driven
processes and physical processes on the earth’s surface within each chapter (as
opposed to having separate human and physical sections). As such, the organiza-
tional framework of each topical chapter will reflect the ways in which human- and
physical-driven processes affect and are affected by one another to create the world
in which we live. The final section seeks to synthesize and apply information pre-
sented in previous chapters to offer analyses of contemporary human-environment
issues (e.g., water resources, climate change, and food security). Our hope is that
these analyses provide instructors with a means of teaching students how concepts
in Section I of the text are applied to issues and challenges in Section II of the text,
oftentimes through a synthesis of multiple environmental issues. Thus, Section III
will also offer instructors a means of evaluating the degree to which students can
analyze and evaluate contemporary environmental challenges through the applica-
tion of fundamental human-environment and geographic concepts.
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