PERSPECTIVES: AN OPEN INTRODUCTION TO CULTURAL ANTHROPOLOGY

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CULTURE AND SUSTAINABILITY: ENVIRONMENTAL ANTHROPOLOGY IN THE ANTHROPOCENE

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Learning Objectives

- Identify the methods and theories anthropologists use to examine human interactions with the environment.
- Define political ecology and explain its relationship to anthropology.
- Describe the Anthropocene and discuss how anthropology contributes to understanding the human role in environmental destruction.
- Explain how anthropology contributes to public discussions and the creation of public policy with lawmakers, activists, corpora-tions, and others regarding major environmental challenges.

LIVING IN THE ANTHROPOCENE

We live on a planet where the climate—winds, precipitation, weather, temperatures—is being modified by the collective impact of the human species. I arrived at anthropology through an interest in understanding human impacts on the environment. I began by studying ethnobotany as an undergraduate and received a master's degree in environmental science. As I researched human-environmental dynamics, I realized that scientists had largely identified what needed to be done to address many of the world's pressing environmental problems, but few of the recommended changes had been adopted, thwarted by political, cultural, and economic forces. Anthropologists' approach is holistic; they seek to simultaneously understand all of the interactions of political, cultural, and economic factors to fully explore the complexity of human-environmental interactions. Thus, I felt that anthropology provided a good place to start to understand and begin to address some of the most important questions facing our species. For example, how can we provide for basic human needs while not sacrificing the welfare of other species? Why do many people say that they care about protecting the environment but then do nothing about it? What political, economic, and cultural factors are prohibiting world leaders from agreeing on solutions to global environmental challenges? To answer such questions, we must understand how humans think and act as groups, our socially and culturally mediated ways of interacting with each other, other species, and the world around us.

Arriving at Environmental Anthropology

In many ways, anthropology as a discipline is only now starting to address these questions. In December 2014, Bruno Latour, a French anthropologist, spoke to a standing-room-only audience at the American Anthropological Association annual meeting in Washington, D.C., to discuss the relationship between the **Anthropocene** and anthropology.[1] Anthropocene is a term used to describe the period (or epoch) in geological time in which the effects of human activities have altered the fundamental geochemical cycles of the earth as a result of converting forests into fields and pastures and burning oil, gas, and coal on a large scale. Because human activities have changed the earth's atmosphere, anthropologists can make important contributions to studies of geology, chemistry, and meteorology by considering the effects of humans and their cultural systems. As Latour noted, the discipline of anthropology is uniquely qualified to provide insight into key components of current environmental crises by determining the reasons behind choices various groups of humans make, bridging the social and natural sciences, and studying contradictions between cultural universals (traits all humans have in common) and particularities (interesting cultural differences).

This chapter summarizes how anthropologists have contributed to analysis and resolution of environmental concerns. I begin with a brief overview of anthropological analysis of human interactions with the environment and then explore how anthropological perspectives toward human-environmental interactions have changed over time. I end the chapter with a call to action—an invitation for students to use lessons they have learned from anthropology to challenge the kinds of thinking that have produced current environmental crises and see where those anthropological approaches take them. Environmental anthropology is an exciting subfield that will grow in importance as questions of environmental sustainability become increasingly central to scientific and popular conversations about the future of our species and the planet.

Humans and the Environment

If we think about anthropology from the classic four-field approach, which includes both physical anthropology and archaeology, many of the questions with which those disciplines have historically wrestled were related to our species' long-term relationship with the environment. Around two million years ago, climate changes decreased the amount of forest and expanded grasslands in Africa, which led to the early **Hominin** radiation (the geographic expansion of multiple Hominin species). It also led hominin species to walk upright, which freed their hands to make and use tools. Subsequent climate changes, particularly expansions and contractions of glaciers associated with ice ages, also contributed to *Homo sapiens* expanding to new parts of the globe.

Fast-forwarding to the beginning of human agriculture roughly 10,000 years ago, we can see how the global expansion of *Homo sapiens* and their first permanent settlements and urban centers led to the development of agriculture, a profound new way of interacting with the environment. The ability of early humans to shape the landscape, first by simply encouraging wild plants to grow and later by planting and irrigating crops and domesticating plants and animals, set humans on the path toward our current problematic relationship with the planet. Archaeologists' questions about human diets, tools, and architecture inevitably explore how ancient civilizations interacted with their environments. For example, archaeologists examine the relative frequency of different kinds of pollen and tree rings over thousands of years to understand how landscapes changed over time through both human and natural processes.

Many archaeologists credit increased productivity that came with agriculture as the foundation of civilization, allowing humans to live in larger settlements, specialize in craft production, and develop social hierarchies and eventually math, writing, and science. From this perspective, the seeds of social complexity were contained within the first grains domesticated in the hills surrounding the Fertile Crescent. Others have questioned the idea that the effects of agriculture were purely beneficial. For example, Marshall Sahlins called foraging (hunter-gatherer) societies "the original affluent societies" and noted that hunter-gatherers had more leisure time, healthier diets, more time to socialize, and greater social equality than agricultural or even industrial societies.[2] He also noted that they were affluent not because they had everything, but because they could easily meet their basic needs of food, shelter, and sociality. Others have looked at the advances in science, medicine, and communication technology and disagreed with Sahlins, arguing that we are better off with the developments brought by agriculture. Sahlins' critique of agriculture (and subsequently of civilization) should not be seen as a suggestion to deindustrialize; rather, it is a challenge to assumptions that Western civilization and its technological developments necessarily represent improvements for human societies. Perhaps the strongest argument against capitalism and industrialization is the real possibility of environmental collapse that those systems have brought.

Sahlins' analysis calls into question the idea that humans as a species are necessarily progressing through history and encourages us to think about how "necessities" are culturally constructed. Do we really need cars or cell phones to be happy? How about books and vaccines? Because many of our innovations in technology, agriculture, and transportation have come at the expense of the natural systems that support us, we need to think about human "progress" in relationship to its impact on the environment. The impacts of climate change from our dependence on fossil fuel, toxic byproducts from expanding chemical industries, and pollution of land, soil, and water from industrialized agriculture are a significant challenge to a vision of human history in which we expect things to get better and better.

Archaeological evidence of collapses of earlier societies—Harappan cities in the Indus River Valley, the Mayans in Central America, and the Rapa Nui of Easter Island, for example—provides a sobering warning as many pre-historic cultures' practices were, at some level, environmentally unsustainable, leading to deforestation, soil salinization, or erosion.

Figure 1: The ball courts at Copan show the complexity and development of early Mayan society. Research suggests that deforestation was one of the causes of the collapse of the city-state.

For example, archaeologists have explored the collapse of a number of Mayan cities from an environmental perspective.[3] After examining samples of pollen from nearby lakebeds, they determined the relative abundance of various ecosystems, such as cornfields and pine forests, over time. They found that deforestation in the uplands associated with an expanding population around the Mayan city of Copan was one of the factors that led to the city's decline. Land was cleared to increase agricultural production and to harvest wood for the construction of houses, fueling cooking fires, and producing lime, which was used to make plaster for large-scale construction projects. The study suggests that prehistoric groups' lack of adequate environmental management systems could have affected their ability to maintain their complex urban societies—a warning for society today.

Another fascinating story of the complex relationships between culture, plants, and the economy relates to development of sugar cane plantations in the Caribbean. Anthropologist Sidney Mintz documented how our sweet tooth led to development of the slave trade, industrialization, capitalism, and colonization in the Americas.[4] He examined how sugar went from being a luxury good associated with the upper class as a spice and medicine to a regular staple for factory workers. The increased consumption of sugar associated with industrialization provided financial incentives for continuing slavery and colonization projects in the Americas. Mintz's work is not usually described as environmental anthropology, but his careful documentation of the relationship between people and sugar cane clearly demonstrates the importance of certain species of plants in shaping human history.

The question of how humans interact with their environment through hunting and gathering, agriculture, and deforestation is central to understanding how human groups meet their basic needs and continue to survive and develop. By examining these past and present cultural configurations critically and carefully, anthropology provides a valuable perspective from which to understand such environmental questions.

Sustainability and Public Anthropology

Environmental anthropology provides an opportunity for anthropologists to engage in larger public

debates. The American Anthropological Association, for example, recently issued a Statement on Humanity and Climate Change meant to "to recognize anthropological contributions to global climate change-related issues, articulate new research directions, and provide the American Anthropological Association with actions and recommendations to support and promote anthropological investigation of these issues including the development of course curricula and application of anthropological theory and methods to the issues."[5] Such statements emphasize the importance of anthropological contributions to current scientific and political debates.

Anthropologists have become involved in environmental causes around the world. In Brazil, for example, they have worked with indigenous groups to maintain land claims, prevent deforestation, and organize against construction of large hydropower projects that threaten the river ecosystems.[6] Others have challenged development of parks throughout the world as a major conservation strategy for biodiversity and explored the impacts of those parks on local communities.[7] Studies of these diverse topics benefit from incorporation of an ethnographic perspective that emphasizes the importance of identity politics, connection to place, and cultural beliefs for understanding how groups of people interact with their environment. This work also reminds us that environmentalism and conservation are grounded in sets of beliefs, assumptions, and world views developed in Western Europe and North America and must be translated as environmentalists work in other cultures.

Environmental anthropology naturally lends itself to use of anthropological perspectives to inform and engage in public policy decisions, land-use management, and advocacy for indigenous communities, urban minorities, and other groups that are often under-represented in places of power and in traditional environmental movements. In that sense, environmental anthropology is a way to inform and connect with a variety of other disciplines that address similar questions of sustainability. Regardless of whether you decide to study anthropology, understanding the value of anthropological insights for environmental questions will allow you to better appreciate and understand the complexity of environmental questions in modern society and potential solutions. The next section examines the diverse ways that anthropologists have historically looked at the human-environmental dynamic, highlighting some of the key theories, methods, and approaches and how they have developed over time.

CULTURAL ECOLOGY

Early Cultural Ecologists

One of the earliest anthropologists to think systematically about the environment was Leslie White. His work built on earlier anthropological concepts of cultural evolution—the idea that cultures, like organisms, evolve over time and progress from simple to more complex. White described how cultures evolved through their ability to use energy as they domesticated plants and animals, captured the energy stored in fossil fuels, and developed nuclear power.[8] From this perspective, "human cultural evolution was best understood as a process of increasing control over the natural environment" through technological progress.[9] White's conclusions are at odds with Franz Boas' historical particularism, which rejected theories based on evolution that labeled cultures as more advanced or less advanced than others and instead looked at each society as a unique entity that had developed based on its particular history. Like earlier anthropologists, White viewed anthropology as a natural science in which one could generate scientific laws to understand cultural differences. His model is useful, however, when exploring the nature of change as our society increasingly harnessed new sources of energy to meet our wants

and needs. He was writing at a time when the U.S. economy was booming and our technological future seemed promising, before the environmental movement raised awareness about harm caused by those technologies.

How the Future Looked 50 Years Ago

This National Public Radio Planet Money episode captures the enthusiasm for technological progress at the 1964 World's Fair, when little was known about the environmental damage such technologies would cause. How did people see the future in 1964? How is their idea of the future different ours today?

Anthropologist Julian Steward first used the term **cultural ecology** to describe how cultures use and understand their environments. His fieldwork among the Shoshone emphasized the complex ways they had adapted to the dry terrain of the Great Basin between the Sierra Nevada and Rocky Mountain ranges. He described how a hunting and gathering subsistence economy that relied on pine nuts, grass seeds, berries, deer, elk, sheep, antelope, and rabbits shaped Shoshone culture. Their detailed knowledge of various microclimates and seasonal variations in resource availability structured their migration patterns, social interactions, and cultural belief systems.[10] Rather than looking for single evolutionary trajectories for cultures as White had done, Steward looked for multiple evolutionary pathways that led to different outcomes and stressed the variety of ways in which cultures could adapt to ecological conditions.

Both White and Steward were influenced by **materialism**, a Marxist concept that emphasized the ways in which human social and cultural practices were influenced by basic subsistence (economic) needs. Both were trained as scientists, which shaped how they looked at cultural variation. Steward was also influenced by **processual archaeology**, a scientific approach developed in the 1960s that focused primarily on relationships between past societies and the ecological systems they inhabited. The shift in anthropology represented by White and Steward's work led to increased use of scientific methods when analyzing and interpreting data. In subsequent decades, movements in both anthropology and archaeology criticized those scientific perspectives, challenging their objectivity, a process I examine in greater detail later in this chapter.

Pigs and Protein

Subsequent anthropologists built on the work of White and Steward, looking for ecological explanations for cultural beliefs and practices. They also drew on newly developed computer science to think about dynamic feedback systems in which cultural and ecological systems self-regulate to promote social stability—**homeostasis**. Some fascinating examples of this work include Roy Rappaport's work in Papua New Guinea and Marvin Harris' work in India.

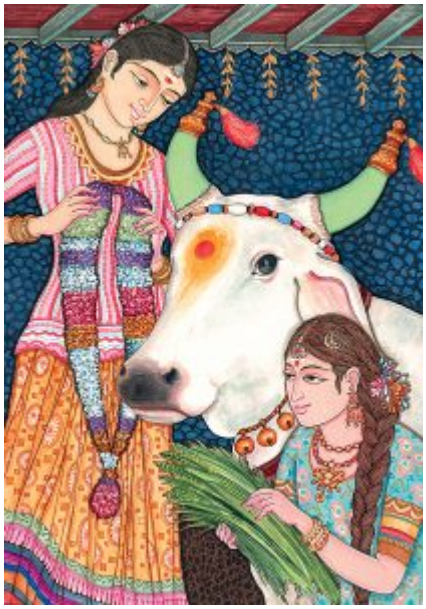

Figure 2: Honoring the cow, is a part of Hindu religious tradition.

Marvin Harris examined Hindu religious beliefs about sacred cattle from functional and materialist perspectives. Among Hindus in India, eating beef is forbidden and cows are seen as sacred animals associated with certain deities. From the perspective of a Western beef-loving country, such beliefs may seem irrational. Why would anyone not want to eat a juicy steak or hamburger? Rejecting earlier academics who regarded the Hindu practice as illogical, Harris argued that the practice makes perfect sense within the Hindu ecological and economic system. He argued that cows were sacred not because of cultural beliefs; instead, the cultural beliefs existed because of the economic and ecological importance of cows in India. Thus, Hindu restrictions regarding cows were an "adaptive" response to the local ecological system rather than the result of Hindu theology.[11] Harris explored the importance of cattle for milk production, dung for fuel and fertilizer, labor for plowing, and provision of meat and hides to the lowest caste, untouchables, who were able to slaughter and eat cows and tan their hides because they were already seen as ritually impure.

Roy Rappaport examined subsistence practices of the Tsembaga in Highland New Guinea, a group that planted taro, yams, sweet potatoes, and sugar cane and raised pigs. Rappaport used scientific terms and concepts such as caloric intake, carrying capacity, and mutualism to explain methods used by the Tsembaga to manage their resources. A population of pigs below a certain threshold provided a number of benefits, such as keeping villages clean by eating refuse and eating weeds in established gardens that had relatively large fruit trees that would not be damaged by the pigs. Once the population reached the threshold, the pigs ate more than weeds and garbage and began to create problems in gardens. In response, the people used periodic ritual feasts to trim the population back, returning the ecological system to equilibrium. Rappaport, like Harris, used ecological concepts to understand the Tsembaga subsistence practices, thus downplaying the role of cultural beliefs and emphasizing ecological constraints.

These early cultural ecologists viewed cultures as trying to reach and maintain social and ecological equilibrium. This idea aligned with ecological thinking at the time that emphasized the balance of nature and the importance of the various components of an ecosystem in maintaining that balance. However, environments and cultures were rapidly changing as colonization, globalization, and industrialization spread throughout the world. In many of those early cases, anthropologists had ignored the larger processes.

As ecologists began to develop more-complex models of how ecosystems change through long-term dynamic processes of **succession** and disturbances (such as storms, droughts, and El Nino events), anthropological approaches to the environment also changed. The next sections examine those shifts in anthropology as environmental movements developed in response to increasing degradation of natural environments.

Early anthropologists were notable for their attempts to understand how different groups of people interacted with their environments over time. Their work paved the way for future environmental anthropologists even though they generally were not directly concerned with environmental problems associated with modernity, such as pollution, tropical deforestation, species extinctions, erosion, and global warming. As people around the world became more familiar with such issues, environmental anthropologists took note and began to analyze those problems and accompanying conservation move-

ments, especially in the developing world, which was still the primary focus of most anthropological research.

ETHNOECOLOGY

Slash-and-Burn versus Swidden Cultivation

Traditionally, anthropologists studied small communities in remote locations rather than urban societies. While much of that work examined rituals, political organizations, and kinship structures, some anthropologists focused on **ethnoecology**: use and knowledge of plants, animals, and ecosystems by traditional societies. Because those societies depended heavily on the natural world for food, medicine, and building materials, such knowledge was often essential to their survival.

As anthropologists, Harris and Rappaport worked to make the strange familiar by taking seemingly bizarre practices such as ritual slaughtering of pigs and sacredness of cows in India and explaining the practices within the context of the people's culture and environment. This work explains not only how and why people do what they do, but also the advantages of their systems in the environments in which they live. An indigenous practice long demonized by the media, environmental activists, and scientists is slash-and-burn agriculture in which small-scale farmers, mostly in tropical developing countries, cut down a forest, let the wood dry for a few weeks, and then burn it, clearing the land for cultivation. Initially, the farmers plant mostly perennial crops such as rice, beans, corn, taro, and manioc. Later, they gradually introduce tree crops, and the plot is left to regrow trees while they open new fields for crops. Every year, as the soil's fertility declines and insects become a problem in the original plot, new land is cleared to replace it. Environmentalists and developers have decried slash-and-burn cultivation as a major cause of deforestation, and governments in many tropical countries have prohibited farmers from cutting and burning forests.

Figure 3: Beans and bananas planted in a swidden field in Acre, Brazil. Note the fallen and burnt logs and the proximity of the forest. Photo by Christian Palmer.

Anthropologists have challenged these depictions and have documented that slash-and-burn cultivators possess detailed knowledge of their environment; their agricultural processes are sustainable indefinitely under the right conditions.[12] When there is a low population density and an adequate supply of land, slash-and-burn cultivation is a highly sustainable type of elongated crop rotation in which annuals are planted for a few years, followed first by tree crops and then by forest, rebuilding soil nutrients and mimicking natural processes of forest disturbance in which tree falls and storms periodically open up small patches of the forest. They used the term **swidden** cultivation instead of slash and burn to challenge the idea of the practice as inherently destructive. The surrounding forest allows the fields to quickly revert to forest thanks to seeds planted in the cleared area as birds roost in the trees and defecate into the clearing and as small rodents carry and bury the seeds. Furthermore, by mimicking natural

processes, the small patches can enhance biodiversity by creating a greater variety of microclimates in a given area of forest.

The system breaks down when cleared forests are not allowed to regrow and instead are replaced with industrial agriculture, cattle raising, or logging operations that transform the open fields into pasture or permanent agricultural plots.[13] The system can also break down when small-holders are forced to become more sedentary because the amount of land they control is reduced by arrival of new migrants or government land seizures. In that case, local farmers must replant areas more frequently and soil fertility declines. A desire to plant cash crops for external markets can also exacerbate these changes because food is no longer grown solely for local consumption and more land is put into agriculture. Anthropologists' studies uncovered the sustainability of these traditional practices, which were destructive only when outside forces pressured local farmers to modify their traditional farming systems.

Plants, People, and Culture

One branch of ethnoecology is ethnobotany, which studies traditional uses of plants for food, construction, dyes, crafts, and medicine. Scientists have estimated that 60 percent of all of the current medicinal drugs in use worldwide were originally derived from plant materials (many are now chemically manufactured). For example, aspirin came from the bark of willow trees and an important muscle relaxant used in open-heart surgery was developed from curare, the poison used on arrows and darts by indigenous groups throughout Central and South America. In light of such discoveries, ethnobotanists traveled to remote corners of the world to document the knowledge of shamans, healers, and traditional medical experts. They have also looked at psychoactive plants and their uses across cultures.

What The People of the Amazon Know That You Don't

This TED talk by ethnobotanist Mark Plotkin describes some important cases of knowledge of medicinal plants learned from indigenous people in the Amazon.

Ethnobotanical work is interdisciplinary, and while some ethnobotanists are anthropologists, many are botanists or come from other disciplines. Anthropologists who study ethnobotany must have a working knowledge of scientific methods for collecting plant specimens and of botanical classification systems and basic ecology. Similarly, archaeologists and paleobotanists study prehistoric people's relationships and use of plants, especially in terms of domestication of plants and animals.

The Kayapó project is a famous ethnobotanical study organized by Darrell Posey and a group of twenty natural and social scientists who examined how the Kayapó people of Brazil understood, managed, and interacted with the various ecosystems they encountered as the region was transformed from a dry savanna-like *Cerrado* to Amazonian rainforest.[14] By documenting Kayapó names for different ecosystems and methods they used to drop seeds and care for certain plants to expand islands of forest in the savanna, the project illustrated the complex ways in which indigenous groups shape the environments in which they live by documenting how the Kayapó cared for, managed, and enhanced forests to make them more productive.

Posey was also an activist who contributed to drafting of the Declaration of Belem, which called

for governments and corporations to respect and justly compensate the intellectual property rights of indigenous groups, especially regarding medicinal plants. He accompanied Kayapó leaders to Washington, D.C., to protest construction of a large dam using funds from the World Bank. Pressure from numerous international groups led to a halt in the dam's construction (plans for the dam have recently been resurrected). Posey's identification of the Kayapó as guardians of the rainforest provided a powerful symbol that resonated with Western ideas of indigeneity and the moral high ground of environmental conservation.

In recent years, some anthropologists have questioned whether the idea of indigenous people having an innate positive connection to the environment—what some call the myth of the ecologically noble savage—is accurate.

The Myth of the Ecologically Noble Savage

The image of the noble savage developed many centuries ago in Western culture. From the beginning of European exploration and colonialism, Europeans described the "natives" they encountered primarily in negative terms, associating them with sexual promiscuity, indolence, cannibalism, and violence. The depictions changed as Romantic artists and writers rejected modernity and industrialization and called for people to return to an idealized, simpler past. That reactionary movement also celebrated indigenous societies as simple people living in an Eden-like state of innocence. French painter Paul Gauguin's works depicting scenes from his travels to the South Pacific are typical of this approach in their celebration of the colorful, easygoing, and natural existence of the natives. The continuing influence of these stories is evident in Disney's portrayal of Pocahontas and James Cameron's 2009 film *Avatar* in which the primitive Na`vi are closely connected to and defenders of an exotic and vibrant natural world. Cameron's depiction, which includes a sympathetic anthropologist, criticizes Western capitalism as willing to destroy nature for profit.

Disney's Pocahontas: Colors of the Wind Song

Disney's Pocahontas presents many of the stereotypes of the ecologically noble savage. What are these stereotypes? Where else do we see these kinds of depictions?

Despite its positive portrayals of indigenous groups, the idea of the ecologically noble savage tends to treat indigenous peoples as an imagined "other" constructed as the opposite of Western culture rather than endeavoring to understand the world views and complexities of indigenous cultures. Similarly, a naive interpretation of indigenous environmentalism may merely project an imaginary Western ideal onto another culture rather than make a legitimate observation about that culture on its own terms.

The Kayapó in the Amazon and another group known as the Penan, who live in the Indonesian rainforest, were both confronted in the past by plans to open logging roads in their traditional territories and build dams that would flood vast amounts of their land. These indigenous communities organized, sometimes with the aid of anthropologists who had connections to media and environmental organizations, to protest the forest. The combination of two causes—rainforest conservation and indigenous rights—was powerful, successfully grabbing media attention and raising money for conservation. Their success led to later instances of indigenous groups joining efforts to halt large-scale development projects. These movements were especially powerful symbolically because they articulated the longstand-

ing Western idea of the environmentally noble savage as well as growing environmental concerns in Europe and North America.[15]

Some anthropologists have noted that these alliances were often fragile and rested on an imagined ideal of indigenous groups that was not always accurate. The Western media, they argue, imagined indigenous groups as ecologically noble savages, and the danger in that perspective is that the indigenous communities would be particularly vulnerable if they lost that symbolic purity and the power that came with it. The image of ecologically noble savages could break down if they were seen as promoting any kind of non-environmental practices or became too involved in messy national politics. Furthermore, indigenous groups' alliances with international activists tended to cast doubt on their patriotism and weaken their position in their own countries. Though these indigenous groups achieved visibility and some important victories, they remained vulnerable to negative press and needed to carefully manage their images.

It is important to note that depictions such as the ecologically noble savage rely on an overly simplistic portrayal of the indigenous "other." For example, some indigenous groups have been portrayed as inherently environmentalist even when they hunt animals that Western environmentalists want to preserve. Often, the more important questions for indigenous groups revolve around land rights and political sovereignty. Environmental concerns are associated with those issues rather than existing separately. The ramifications of these differences are explained in the next section, which discusses the people-versus-parks debate.

Land Claims and Mapping

One way that anthropologists have successfully used traditional ecological knowledge to advance indigenous rights is through advocacy on behalf of indigenous groups seeking to establish legal ownership or control over their traditional lands. This was first done in Alaska and Canada in the 1960s and 1970s. Indigenous groups wanted to map their seasonal movements for hunting, gathering, and other subsistence practices. The maps would demonstrate that they used the land in question and that it was important for their continued physical and cultural survival.

Since then, communities throughout the developing world have adopted similar strategies with the help of geographers and anthropologists to demarcate their lands. Often, lands used by indigenous groups are seen as empty because their population densities are quite low, and developers imagine the land as unused and open for taking. The production of maps by indigenous communities challenges those notions by inscribing the landscape with their names, relationships, and the human histories that mark their claim to the land. The maps become important symbols and tools for organizing local resistance against large development projects.

The non-governmental organization (NGO) Native Lands, for example, assisted in mapping the Mosquitia region of Honduras. Although the area, which consisted of 20,000 square kilometers, included 170 communities, most government maps showed it as practically empty. Earlier, in a backroom deal, the entire area had been granted as a logging concession to Stone Container Corporation, a Chicago-based company that made cardboard boxes and paper bags.[16] When Native Lands became involved in the early 1990s, mapping was used to bring the diverse communities in the region together to communicate their presence and advocate for an end to the logging concession. The power of maps to communicate the presence of indigenous people on the land is critical, especially when the indigenous groups lack legal ownership.

POLITICAL ECOLOGY

Questioning Science

In the 1960s, theoretical movements in the social sciences and humanities began to challenge the presumed benefits of modernity and science. These movements were led in part by feminist and post-colonial theorists who saw science as part of a patriarchal system that was complicit in the subjugation of women and colonized people throughout the world. In environmental sciences, this move to question the objectivity of science can be seen in political ecology, a diverse field that includes many anthropologists along with geographers, political scientists, sociologists, and other social scientists. Political ecology's primary message is the importance of examining environmental questions that seem, at first glance, to be strictly scientific (i.e., apolitical). Questions of cause and effect, for instance, are comprised of political and economic agendas that can be masked by a seemingly neutral language of scientific objectivity. By focusing our attention on the power dynamic in political dimensions of conservation, principally in the developing world, political ecologists illustrate why conservation efforts so often fail to achieve the desired goals.

In an early an influential study of political ecology, Piers Blaikie and others argued that soil erosion was not caused by many of the factors blamed by state governments, including overpopulation, bad farming practices, and environmental stresses. Instead, they found that state policies such as taxes forced farmers into capitalist economic systems that encouraged unsustainable farming practices.[17] From this perspective, soil erosion, which seemed to be primarily a local problem, was actually connected to national politics and needed to be addressed in that larger context. Once attention had been drawn to the relationship between state policies and soil erosion, the solution to the problem could no longer come from simply teaching small-scale farmers better soil conservation techniques. It required eliminating government practices and economic conditions that provided an incentive to use unsustainable farming practices.

Political ecology often focuses on the impacts of governments and corporations in establishing political and economic systems that constrain local behavior and challenges standard narratives regarding environmental destruction and conservation. Learning about political ecology can be difficult for environmentally minded people because it requires them to rethink many of their own positions and the science that supports them.

Revisionist Environmental History

Some of my favorite work in political ecology challenges the causes and effects of tropical deforestation. James Fairhead and Melissa Leach, for example, looked at tropical deforestation in the West African country of Guinea. [18] The state's forestry department and later conservation organizations described the savanna as containing only small fragments of a once extensive tropical forest. Administrators, foresters, and botanists had created forest policies based on the idea that this degradation was caused by local villagers as they cleared and burned forests to create fields for agriculture. Through careful study of historical archives, oral histories, and historical aerial photographs, Fairhead and Leach challenged these narratives. Instead, they argued that the remaining fragments of forest had been planted by local villagers who had gradually planted useful species around their villages, improving the

soil for planting and generating other positive ecological changes. Rather than being the cause of the deforestation in areas that was previously forest, the villagers were creating the forest in an area that had previously been savanna through generations of hard work, turning the colonial narrative on its head.

Another fascinating tale comes from William Balee's work in the Amazon. Balee was a friend of Darrell Posey, and their work together got Balee thinking about the extent to which the Amazon rainforest is a product of human productive activities and not entirely natural processes. Balee disagreed with earlier anthropologists who had described how primitive groups were forced to adapt to the constraints imposed by fragile tropical ecosystems, such as declining soil fertility, a lack of plants and animals that provided protein, and other limiting factors that constrained their behavior. Balee examined a wide variety of ecosystems in the Amazon that seemed to have been created or significantly modified by human activity, including the forest islands of the Kayapó discussed by Posey, babassu palm forests, bamboo forests, Brazil nut forests near Maraba, and liana forests. His conservative estimated was that at least 12 percent of the Amazon, the largest rainforest on the planet, was a product of indigenous intervention. This conclusion challenged two major assumptions made about the rainforest and the people who lived there. First is the notion that indigenous groups were forced to adapt to the harsh environment of the rainforest. Instead, Balee found that they were resource managers who had developed ecosystems to better provide for their needs. Second is the notion that the Amazon was primeval, untouched, and pristine.[19] If we extend this analysis to other regions and ecosystems, it challenges the entire notion of "untouched nature." If the wildest, least populated, and largest rainforest in the world is already highly **anthropogenic,** or shaped by humans, what can we say about supposed ideas of wilderness in other places?

Environmental historian William Cronon tackled this question directly in his essay, "The Trouble with Wilderness, or Getting Back to the Wrong Nature."[20] Cronon argued that, by celebrating a nature supposedly untouched by human hands, we tend to forget about preserving the nature with which we come in contact every day. If we focus exclusively on a concept of **wilderness**, which excludes humans and human activities by definition, we may ignore ways to help humans better interact with nature, leading to conservation policies that try to create parks without anyone inside of them and do not fully consider agricultural and urban areas. It means that one must leave civilization behind to be in contact with nature. Cronon ended his essay with a plea:

If wildness can stop being (just) out there and start being (also) in here, if it can start being as humane as it is natural, then perhaps we can get on with the unending task of struggling to live rightly in the world, not just in the garden, not just in the wilderness, but in the home that encompasses them both.[21]

Cronon's call to action is for humans to consider themselves fully part of nature and to look for ways to behave responsibly in that relationship. In a way, his message is similar to Bruno Latour's about the Anthropocene. By recognizing that nature does not exist outside of human activities, we must come to terms with the impacts of our lifestyles on the environment. Some may believe that this cheapens nature, making it less sacred and significant, but understanding the diverse ways in which humans have affected the environment should make us better able to appreciate and evaluate our interactions with it. Instead of seeing nature as outside of human activities, we need to consider how our food production, transportation, and habitation systems affect the environment.

People Versus Parks

Generally, when we think of nature, we tend to think of national parks and other kinds of **protected**

areas set aside for conservation under various categories. In the United States, these include national and state parks, forests, wilderness areas, recreation areas, and wildlife conservation areas. In most cases, people are allowed to visit these areas for recreational or scientific purposes but cannot live directly in them, and regulations control the kinds of activities allowed. Protected areas developed from the Western vision of nature that separates it from culture and assumes that one must exclude humans to conserve nature. This model of setting aside protected areas has been exported to the rest of the world and persists as the most common strategy for numerous environmental goals, including protection of watersheds, endangered plants and animals, and providing space for people to interact with nature.

Figure 4: Yosemite Valley, one of the first national parks in the United States, established a precedent of setting aside natural areas for their scenic beauty, recreation, and conservation. Photo by Christian Palmer.

The most common example of a protected area is a national park. In the United States, national parks are so popular that they have been called "America's Best Idea." While I am an enthusiastic fan of national parks, I also recognize problems associated with the concept. We often forget, for example, that the "natural" state of such parks is mostly a recent phenomenon. Many Native American groups were systematically removed from parks (and rarely compensated) to make the parks "natural," and some parks, such as Mt. Rushmore in the Black Hills of South Dakota and Devil's Tower in Wyoming, are directly on top of sacred sites for Native Americans. In other areas of the world, especially in developing countries, most protected areas are occupied by groups of people who have lived there for decades or centuries and have legitimate claims to the land. Some may not be aware that their land is being transformed into a park and, once informed, are shocked by all of the new regulations they are expected to obey. In worst-case scenarios, they are evicted without compensation, becoming environmental refugees. From the perspective of such groups, the government seems to value elephants, tigers, or scenic vistas more than the people living on the land.

The conflicts that have developed between local communities in and around protected areas and state conservation officials and international conservation NGOs that advocate for the parks is referred to as the "people-versus-parks debate."[22] Communities, rather than seeing parks as preserving a public good that benefits everyone, view creation of a park as an effort by government officials to extend their power to remote rural areas. And those negative views can thwart conservation efforts when locals resent preferential treatment of animals and choose to poach or simply ignore the new regulations.

Conservation groups have begun to recognize that they must support economic development of local communities to get them on board with conservation efforts. When local residents benefit from jobs as park guards, tour guides, and research assistants, they recognize the positive economic benefits of conservation and support the initiatives. This approach aims to combine conservation and development, bringing together typically different objectives. Initially, this approach was a response to development policies associated with building infrastructure such as roads and dams that had huge environmental impacts and created negative press for the World Bank, the U.S. Agency for International Development (USAID), and other institutions that funded the projects. Now, most conservation projects incorporate development objectives, and the environmental impacts of development projects usually must

be assessed. In addition, the failure of many of these projects has inspired governments and NGOs to include local communities in planning and operating conservation and development schemes.

Conservation and Sustainable Development

Since the early 1990s, environmental conservation organizations such as the Nature Conservancy and Conservation International and development organizations such as the World Bank and USAID have been working to bring conservation and development together. The structures and success of these approaches vary widely. Some aim to help local communities develop industries that depended on rainforests in nondestructive ways, such as non-timber forest products like rattan, rubber, medicines, and fruit. By assisting local communities in developing and marketing such products, the programs have provided them with economic alternatives that encourage people to preserve rainforests instead of chopping them down, a form of **sustainable development**.

The conservation and development project with which I am most familiar is related to **extractive reserves** in the Brazilian Amazon. I spent a summer doing research for my master's thesis on extractive reserves established by Brazilian rubber tappers in Acre, which is in the northwestern corner of the Brazilian Amazon. These rubber tappers live in the rainforest and tap natural rubber by scraping a long thin cut into the bark of the tree and returning later in the day to collect the sap that had dripped into a small container hung on the tree. Rubber trees do not grow together; they are spread out throughout the forest, requiring rubber tappers to walk several trails each day. Many also collect and sell Brazil nuts, which fall from ancient trees that live for centuries. Brazil nuts cannot be commercially grown so they must be collected from rainforests. Both of these economic activities require a healthy, mature forest. And although rubber can be produced synthetically, natural rubber is stronger, longer lasting, more flexible, and more resistant to heat than synthetic alternatives, making it ideal for use in medical and aeronautic industries where high-quality material is essential.

As cattle ranching expanded in the Amazon, rubber tappers were being evicted because they did not have formal title to the land on which they lived and worked. Led by local activist Chico Mendes, the rubber tappers organized and petitioned the government for the right to remain on the land. Mendes was eventually assassinated by owners of some of the cattle ranches who were unhappy about his activism, but ultimately, the movement was successful. Environmentalists who were worried about Amazonian deforestation joined forces with the rubber tappers, who were worried about their livelihoods, and together they created extractive reserves—protected areas owned by the federal government but managed by local communities of rubber tappers who could stay on the land indefinitely as long as they followed the environmental regulations they established. The model was successful and has since been expanded to include millions of hectares throughout the Amazon.

As with many conservation and development projects, the economic benefits of the extractive reserves were slow to accrue. When rubber prices fell in response to international commodity markets, many families stopped tapping rubber and focused on subsistence agriculture. In fact, some turned to cattle ranching, mimicking on a smaller scale many of the destructive processes they had originally protested. Because the regulations were poorly enforced, a number of families gradually turned old swidden fields into pastures instead of letting the fields revert to rainforest.

Despite these challenges, development of the land was significantly reduced relative to the original plan of allowing owners of large tracts to move in and convert large areas to pasture and soy plantations. Likewise, the rubber tappers, though still poor, had access to greater resources than they would if they have been evicted and forced to move to urban slums. Extractive reserves succeeded because they were

implemented across vast areas of the Brazilian Amazon and provided rights to thousands of small-holders.

Significant challenges remain for organizations working to improve the standard of living of rubber tappers in Brazil and conserve biodiversity, and this case study illustrates many of the problems associated with conservation and development models. Often, the economic gains are limited and require compromises in terms of conservation benefits. Usually, neither local communities nor environmentalists are completely happy with the models and their results but also agree that compromise is better than the rampant destruction averted by a reserve. Research on political ecology from such case studies forces us to recognize that the debates are not solely about environmental ethics; they also involve control over valuable resources such as land, timber, and oil. Political ecology invites us to think about the local political and cultural processes that shape the outcomes of conservation projects and determine who benefits from such projects.

First World Political Ecology

A significant challenge for political ecologists is that most of the research so far has been done in the developing world; relatively few studies have been conducted in the United States and Europe. Some newer studies are aiming to showcase what political ecology might look like when applied to similar questions in the developed world. One such study came from the Sierra Nevada foothills in California. There, a participatory conservation project was being developed that would have included local conservation organizations, government offices, and other groups. Their goal was to create an environmental management plan for the region that would limit development and urban growth. They tried to bring together a variety of environmental and pro-development groups to dialogue but were met with an intense political backlash. Pro-development forces, rather than participating, mobilized politically to remove supporters of the plan from county government seats and derail the process. In first world countries, local groups can mobilize significant political and economic resources to influence the fate of a project. This is an unlikely scenario in the developing world where conservation organizations are generally more powerful than local communities.[23]

Clashes between environmentalists, who are often **exurban** migrants who moved from urban to rural areas for outdoor activities and scenic nature, and longtime residents who are involved in extractive industries such as mining, ranching, and agriculture are common in the western United States. In many cases, communities are bitterly divided over the importance of nearby public lands and the role of the federal government in managing those lands. In developing countries, political ecologists as a group tend to side with local communities and against government intervention. In the United States, left-leaning and environmental sympathies can push them to side with government intervention at the expense of local communities. Some political ecologists have noted this contradiction and called for local movements and their pushes against extension of states power to be taken more seriously, including in the United States.[24]

Another fascinating political ecology associated with the first world is a study by Paul Robbins and Julie Sharp that looked at the American lawn, noting that 23 percent of urban land in the United States is dedicated to lawns and that urban areas are growing at a rate of 675,000 hectares a year.[25] In addition, the vast majority of those lawns are sprayed with fertilizers, herbicides, and pesticides. Because these chemicals wash into waterways, lawns have an enormous collective environmental impact. Robbins and Sharp analyzed advertisements for lawn care products and interviewed and surveyed households across the country, leading to some startling discoveries. One of the strongest indicators of intensive

and toxic lawn care was not a lack of knowledge about the environmental impacts of the products, but how well they knew the names of their neighbors. They describe the moral economy of a turf grass commons in which maintaining a healthy lawn signified important values of being connected to the community, your family, and nature. The aesthetics and family values associated with lawns outweighed concerns about environmental impacts, suggesting that water conservation activists must understand and address underlying cultural ideas about lawns in the United States.

Where's the Ecology?

Political ecologists Andrew Vayda and Bradley Walters have noted that the field of political ecology seems to be increasingly political, overemphasizing how different groups use environmental issues to gain control over land and resources and ignoring important ecological considerations.[26] They argue that political ecologists need to take the limits, constraints, and challenges associated with natural systems more seriously and research those systems in addition to local cultural and political systems. In a study of the destruction of mangrove forests in the Philippines, they examined both the role of local communities in the destruction and management of mangrove ecosystems and the natural limits that impede replanting in the area. The next section presents examples of anthropologists who thought creatively about how to integrate theories from the natural sciences back into anthropology while simultaneously questioning whether science provides unbiased objective results. This requires a careful balancing act but is necessary to generate an approach that respects the contributions of scientific and anthropological knowledge.

ADDITIONAL APPROACHES TO ENVIRONMENTAL ANTHROPOLOGY

Eco-Justice: Race, Gender, and Environmental Destruction

Many environmental justice advocates are anthropologists and political ecologists. They examine environmental questions from the perspective of social equality, identifying impacts and risks associated with environmental damage that have disproportionately affected socially marginalized groups. For example, on the Hawaiian island of Oahu the trash incinerator and landfill are on the west side of the island where many native Hawaiians and other low-income groups live.[27] Locating landfills, incinerators, chemical plants, industrial factories, nuclear waste storage, and other environmentally hazardous facilities near communities of color, Native American reservations, and relatively poor communities is not accidental. A lack of economic and political power prevents residents of such communities from influencing the large industries and government agencies that determine where such facilities are placed.

The same process is at work when environmentally toxic jobs and waste storage facilities are outsourced. For example, many computers and other electronic appliances that contain toxic components made from heavy metals are shipped to West Africa for disassembly and recycling.[28] This arrangement makes economic sense for consumers in relatively rich countries in North America and Europe, but the workers in Africa are out of sight and out of mind, often working without proper protection from the toxic metals or even training on their dangers. And as global supply chains have expanded, consumers in the United States rarely know where the clothes, electronics, and toys they purchase are made, the

impacts of that production, or what happens to them after they dispose of them. By looking at these long complex commodity or supply chains, which cover products from their cradle to grave, social scientists interested in **eco-justice** can create awareness of these issues.

Anthropologists also work to connect **ecocide** (environmental destruction) with **ethnocide** (cultural destruction). In many indigenous communities worldwide, cultural activities and beliefs are connected to specific landscapes and ecologies. Consequently, as a logging or mining company moves in, it destroys both the environment and culture. Eco-justice studies call attention to these connections and seek to protect both culture and the environment and the relationship between them. Barbara Rose Johnston's work with Marshallese Islanders in Micronesia documented the impact of U.S. atomic bomb testing on the atolls and supported their claims for compensation from the United States for damage by carefully documenting the relationship between their culture and the contaminated landscapes ruined by nuclear testing.[29]

Anthropologists are often involved in these kinds of research projects because they are on the ground in remote locations around the world and share a disciplinary interest in raising awareness of cultural differences and inequality. They are also trained to examine categories of race, class, nationality, and other social factors that differentiate groups of people and are the basis for unequal treatment. While valuing cultural diversity, anthropologists also argue for a holistic perspective that universally values human life regardless of such differences.

Science and Technology Studies

The study of science and technology is a diverse field that uses social science methods to analyze the culture of science in industrialized and modern societies. Like political ecology and ethnoecology, science and technology studies question the objectivity of modern science to some extent and view science as a product of specific cultural understandings. These studies often look to the history of a science to understand its development in a specific cultural, political, and economic context.

An early developer of the discipline is Bruno Latour, who introduced the idea of the Anthropocene discussed at the beginning of this chapter. Latour's earlier work included a study, *Laboratory Life: The Social Construction of Scientific Facts* (1979), written with Steve Woolgar, that used the ethnographic technique of participant observation in a laboratory at the Salk Institute for Biological Sciences to determine how scientific knowledge is produced and challenged dominant narratives about the scientific method.[30] Other studies have examined concepts of race and indigeneity in the Human Genome Project and how remote sensing technologies shape how anthropologists interact with ecosystems in the Guatemalan rainforest.[31] As science and technology become increasingly important parts of our lived experiences and our understanding of the environment around us, anthropologists naturally analyze those connections.

Many anthropologists who study science and technology endeavor to make sure they do not throw the baby out with the bath water. They do not deny the important contributions of science and the scientific method. However, they also pay attention to the limitations and biases inherent in those methods.

Multispecies Ethnographies

Multispecies ethnographies challenge the centrality of humans in the world. Most of the stories we

tell about ourselves and our place in the world and especially stories told by anthropologists revolve around *Homo sapiens*. Increasingly, though, some anthropologists have begun to think about how other species make decisions and exercise a degree of agency that can influence history. For example, Donna Haraway writes about dogs and how the relationship between dogs and humans has evolved over time. She criticizes people who anthropomorphize dogs and challenges her readers to understand dogs on their own terms.[32]

We can also think about the role of bacteria in human evolution and cultural development and remind ourselves that diseases, parasites, and symbiotic gut bacteria that allow us to eat certain kinds of foods have been very influential in shaping human history and cultural development over time. Other works have, for example, re-examined plant and animal domestication from non-human perspectives and explored how forests "think."[33] By carefully considering other species and ecological processes, we decenter our increasingly human-centered focus. Much of the work on multispecies ethnography has been done by feminist anthropologists who have already been at work for decades on similarly decentering male-focused histories of our species.

APPLYING ANTHROPOLOGY IN CONSERVATION

Reforestation

Anthropological analyses of the environment may seem overly theoretical and abstract, far removed from actual practices and the work of learning to live with and within our environment. Anthropologists may be seen as hidden in ivory towers of academia, disconnected from real world issues and problems. However, applied and activist anthropology offer avenues for anthropologists to tackle problems on the ground and make a direct difference. Applied anthropologists often work with conservation and development organizations to implement projects that depend on an accurate understanding of local cultures and practices to succeed.

Anthropologist Gerald Murray's doctoral dissertation examined land tenure among small-holders in Haiti. After finishing his dissertation work, Murray delivered a presentation to USAID on a Haitian reforestation project. He joked that if they gave him "a jeep and carte blanche access to a $50,000 checking account" he could prove his "anthropological assertions about peasant economic behavior and produce more trees on the ground than their multi-million-dollar Ministry of Agriculture charade."[34] USAID program officers accepted his challenge, inviting him to head a $4 million project to reforest Haiti. Using his understanding of Haitian small-holders, he drastically changed the USAID's approach. Instead of trying to convince small-holders that trees were valuable for their environmental services, he emphasized fast-growing species that could be sold for firewood, charcoal, and lumber. By giving the trees to the small-holders and allowing them to harvest and sell them whenever they wanted, he motivated them to plant and care for the seedlings like any other valuable cash crop. In prior projects, tree-cutting was prohibited and the trees belonged to the government. Consequently, no one took care of the trees and they were eventually destroyed by livestock or neglect and rarely reached maturity. Treating the trees as a cash crop motivated farmers to plant trees on their own land, thus meeting USAID's goals of stabilizing the soil and reducing illegal tree cutting (since farmers had access to stands of their own) and providing a direct economic benefit from selling wood. The project was a stunning success—20 million trees were planted in the first four years. By understanding local farmers' perspectives, Murray

was able to work with Haitian small-holders instead of seeing them as an impediment to reforestation efforts.

A number of anthropologists are working with conservation and development organizations to assist them in understanding local cultures and implementing conservation and develop projects. This work is often done in teams in which anthropologists join with foresters, conservation biologists, agronomists, and others to implement projects. Because they often speak the local language, understand the peoples' perspectives, and are interested in close, on-the-ground observations, anthropologists make valuable contributions in support of conservation and economic development.

Climate Change

In 2014, the American Anthropological Association's Global Climate Change Task Force submitted a report on climate change that summarized anthropology's engagement with the issue. Currently, climate change is perhaps the single most important environmental issue worldwide, and our responses to it will shape the future of our species on the planet. The report identified the human causes and contributions to climate change and emphasized that climate change is already having an impact as rising sea levels are forcing residents of places such as Kiribati to flee their island homes and melting ice shelves threaten the subsistence practices and the lifestyle of Inuit groups in Alaska. These examples illustrate how the impacts of climate change will disproportionately affect groups who have contributed the least to the accumulation of greenhouses gases, highlighting the social inequality of impacts of climate change around the world.

The report analyzed drivers of climate change, focusing on consumption, land use, energy, and population growth. An anthropological analysis of consumption reminds us that the categories of "necessities" and "luxuries" are cultural constructs. For example, Western societies now accept cell phones as necessities despite the fact that humans survived perfectly well for thousands of years without them. As the global middle class expands and places new demands on ecosystems, a cultural understanding of social classes and related consumption practices will be increasingly important to analyses the causes of climate change and potential solutions.

The report also criticized much of the language of climate change and its focus on concepts of adaptation, vulnerability, and resilience that elided the differential impacts of climate change on different groups of people. The task force noted that proposed global solutions focused on top-down management strategies that did not take existing social issues of "poverty, marginalization, lack of education and information, and loss of control over resources" that structure vulnerability of different populations to the impacts of a warming planet into account. [35] The report also illustrates the power of language to shape certain debates and potential solutions to problems, an important piece of anthropological analysis.

At the end of the report, the task force recommended actions anthropologists could take to contribute to efforts to address global climate change, including reducing the carbon footprint of anthropological meetings, working with interdisciplinary research teams to continue research, and maintaining a research agenda that stresses the importance of anthropological contributions to discussions of climate change. Perhaps most interesting is their conclusion that many of the most innovative and creative approaches to addressing and mitigating the effects of climate change were occurring at local and regional levels, recognizing communities' innovative efforts to bypass national and international gridlock and develop approaches that reflect local realities and address local problems. The anthropological

focus on local communities is a welcome change of perspective when, by definition, the scale of global climate change seems to preclude local involvement and solutions.

Anthropologists at Work in Conservation Organizations

Anthropologists work for international conservation organizations like Conservation International, The Nature Conservancy, and the World Wildlife Fund and with government agencies like the National Park Service, the Peace Corps, and USAID. They also work for smaller conservation organizations, urban planning initiatives, environmental education groups, environmental activist networks, and other initiatives aimed at reducing our negative impact on the planet.

Cultural Resources Management

Management of cultural resources is a growing field of anthropology that catalogs and preserves archaeological sites and historic places threatened by development, bringing together various principles developed in anthropology over the years. First, it recognizes the need to preserve both "natural" ecosystems and ecosystems shaped by past human activities. By connecting natural and human diversity, anthropologists recognize humans' interdependence with the environment over time. Second, cultural resource managers recognize the need for continuing involvement of indigenous communities with archaeological sites and seek their input to inform management plans and practices. As cultural resource management has become standard operating procedure, archaeologists have begun to meet with members of the local community and others who have a stake in their research. These interactions improve archaeological research and create the kind of cross-cultural bridges that strengthen the discipline. Finally, destruction of historical places and archaeological sites is a form of environmental destruction that, like climate change and species extinctions, requires us to critically examine the cultural values underlying that destruction.

CONCLUSION

The discipline of anthropology provides a unique perspective on human-environmental interactions and thus generates valuable insights into the social, political, and cultural complexity of modern environmental problems. Anthropologists are hard at work with governments, conservation organizations, and community groups to understand and solve complex environmental problems. I hope this discussion has challenged you to think about the environment and conservation in a new way, allowing you to help reframe these debates and develop innovative solutions to the complex problems that confront us.

Discussion Questions

1. In what ways have anthropologists examined human interactions with the environment over time?

2. What is the myth of the ecologically noble savage? What are some recent examples of this myth? What is the impact of this idea on indigenous people?
3. How has research in political ecology challenged traditional conservation efforts? What are some of the problems with promoting parks or ecological reserves as solutions to environmental problems?
4. What is the Anthropocene? How has research in anthropology contributed to an improved understanding of how humans interact with the "natural" world?
5. What insights from anthropology do you think would be most useful to the public, environmental activists, and government officials when considering policies related to current environmental challenges?

GLOSSARY

Anthropocene: a term proposed to describe the current moment (or epoch) in geological time in which the effects of human activities have altered the fundamental geochemical cycles of the earth. There is some disagreement about when the Anthropocene period began—most likely, it began with industrialization.
Anthropogenic: environments and pollutants produced by human activities.
Cultural ecology: a subfield of cultural anthropology that explores the relationship between human cultural beliefs and practice and the ecosystems in which those beliefs and practices occur.
Cultural evolutionism: a theory popular in nineteenth and early twentieth century anthropology suggesting that societies evolved through stages from simple to advanced. This theory was later shown to be incorrect.
Ecocide: destruction of an environment, especially when done intentionally by humans.
Eco-justice: a movement to recognize and remedy the adverse relationship between social inequality and the harms and risks that come from environmental destruction and pollutants.
Ethnocide: destruction of a culture, often intentionally, through destruction of or removal from their territory, forced assimilation, or acculturation.
Ethnoecology: the relationships between cultural beliefs and practices and the local environment. Components include ethnobiology, ethnobotany, and ethnozoology.
Extractive reserves: community-managed protected areas designed to allow for sustainable extraction of certain natural resources (such as fish, rubber, Brazil nuts, and rattan) while maintaining key ecosystems in place.
Exurban: migration of generally affluent people from urban areas to rural areas for the amenities of nature, recreation, and scenic beauty associated with rural areas.
Historical particularism: the theory that every culture develops in a unique way due to its history, including the interaction of people with the natural environment.
Homeostasis: the movement of a particular system (a human body, an ecosystem) towards equilibrium. In ecology this is associated with the idea that ecosystems should remain at a climax ecosystem associated with an area.
Hominin: Humans (*Homo sapiens*) and their close relatives and immediate ancestors.
Materialism: a Marxist theory emphasizing the ways in which human social and cultural practices are influenced by basic subsistence (economic) needs.
Multispecies ethnographies: an ethnographic approach in which anthropologists include non-human species as active participants in a society or culture and study their influence and actions.

Political ecology: an interdisciplinary field of research that emphasizes the political and economic dimensions of environmental concerns.
Processual archaeology: a shift in archaeological studies toward scientific methods, testing of hypotheses, quantitative analysis, and theory-driven approaches and away from an earlier emphasis on typologies and descriptive analysis.
Protected areas: lands set aside for conservation of the environment for their scenic beauty, biodiversity, recreational value, and other reasons.
Succession: changes in types of species in an area over time. For example, it would describe the different ecosystems that gradually replace one other after a forest fire.
Sustainable development: development that can meet present needs without damaging the environment or limiting the potential for future generations.
Swidden: an agricultural practice, also called shifting cultivation and slash-and-burn, in which fields are cleared, burned, and planted for several seasons before being returned to fallow for an extended period.
Wilderness: a natural area that is untouched or unchanged by human activities and often seen as a cultural construct of the American West.

ABOUT THE AUTHOR

I grew up hiking and surfing in Hawaii and became interested in the environment and conservation. I studied Biology and International Cultural Studies at Brigham Young University-Hawaii as an undergraduate, including research on how traditional Hawaiian healers adapted to introduced plant species and diseases. My master's degree is in Environmental Science from the Yale School of Forestry and Environmental Studies where I researched extractive reserves in the Brazilian Amazon. My Ph.D. in Cultural Anthropology at the University of California, Santa Cruz focused on tourism, urban development, and conservation in a small fishing town in Northeastern Brazil that was transitioning to a tourist economy.

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