NATURE AND THE ENGLISH DIASPORA

environment and history in the united states, canada, australia, and new zealand

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INTRODUCTION
invaders, settlers, inhabitants

> You know, I think if people stay somewhere long enough – even white people – the spirits will begin to speak to them. It's the power of the spirits coming up from the land. The spirits and the old powers aren't lost, they just need people to be around long enough and the spirits will begin to influence them.
>
> A Crow elder, as reported by poet Gary Snyder[1]

We Anglos – whites, whitefellows, pakeha – do not usually think in these terms. The land is something we possess, not something that possesses us. We know it and we shape it; it does not know or shape us. But even in our own tradition there is that other current. The land was ours, said Robert Frost, before we were the land's, and a multitude of others have said it too, in poetry, paintings, stories, and reports. This book is about the ways in which the Anglo settlers of Australia, Canada, New Zealand, and the United States have in the past two centuries sought to understand their lands and find their place in them by the use of their culture's organized nature knowledge – science. It is not as visible or colorful a tale as the epic of conquest that has become so much a part of national identity, but in the long run it is at least as significant. The current environmental crisis suggests that unless we learn to live with the land we might not live on it at all and certainly will not continue to live well.

These countries are my subject because of their common history, common demography, and interconnections. They are, in Geoffrey C. Bolton's terms, the Anglo "colonies of settlement," in Alfred Crosby's, the Anglo part of the "neo-Europes."[2] Unlike the "colonies of empire,"

[1] Gary Snyder, *The Practice of the Wild* (San Francisco: North Point Press, 1990), 39.

[2] Geoffrey C. Bolton, *Britain's Legacy Overseas* (London: Oxford University Press, 1973), 5; Alfred Crosby, *Ecological Imperialism* (Cambridge University Press, 1986). The latter appeared about the time I began research on this project and I am much in Crosby's debt.

where a small foreign ruling class dominated a much larger population of "natives," here the Anglos were not only masters but by far the largest group of powerful actors. Here, and only here, predominantly English-speaking Europeans dispossessed and almost exterminated the earlier inhabitants, allowing the illusion that the lands were "vacant" or "wilderness." Here they could speak of creating a "new England" – a dream as marked in New Zealand, founded on the Wakefieldian vision of a transplanted and purified British society in the South Seas, as in Crevecouer's America. Read through their literature, newspapers, legislative debates, and speeches. They were new nations populated by new men. (Women were physically present but rhetorically almost invisible.) Everywhere there were the same appeals to the "conquest of nature," "progress," a particular kind of civilization, and until recently the virtues of an agricultural life and a society of independent farmers. Land laws had in common the aim of individual independence and self-sufficient small farms. (There is even a depressing similarity in the desire to evade these laws, accumulating more acres, and in the methods used to do it.)[3] Statutes made the same kinds of animals "game" and set standards for a "fair chase." "Bad" animals were everywhere marked for destruction, and by changing the names of the species and adding or deleting references to "the Queen's most excellent majesty" to suit the jurisdiction, the same mammalian pest control laws could have been used from Perth to Fredricton.

These countries also form a group because of the connections they developed to each other. They had, to be sure, other ties. Australian connections to southern Africa, for one example, began when the First Fleet picked up plants and animals at the Cape on its way to Botany Bay, and continued into the twentieth century, when Australians looked to the region for everything from pasture grasses and farm stock to ornamental plants. An elite group of experts that conspicuously included continental Europeans as well as British scientists circulated among all the settler countries and the colonies of empire. German naturalists were not only travelers and explorers but directors of agencies and museums. German foresters staffed the South Indian Forest Service, which was the administrative model for the U.S. Forest Service, and they went from there to Australia. Others went to North America. Nor is the

[3] Joseph Powell, *Environmental Management in Australia, 1788–1914* (Melbourne: Oxford University Press, 1976); Manning Clark, *A Short History of Australia* (New York: Penguin, 1987), 140–6; Keith Sinclair, *A History of New Zealand* (Auckland: Penguin, 1980), 151–71; Fred Shannon, *Farmers' Last Frontier* (New York: Holt, Rinehart, & Winston, 1945), 51–75. A recent discussion of this topic is John C. Weaver's "Beyond the Fatal Shore: Pastoral Squatting and the Occupation of Australia, 1826–1852," *American Historical Review, 101* (October 1996), 981–1007.

demographic separation between the colonies of empire and settlement airtight. South Africa had two European populations, and Argentina an even more heterogeneous mix of Europeans.

These four countries, though, are at the far end of the demographic spectrum, and a common language, culture, and settlement experience insulated, if it did not isolate, them. Ties were closest between Canada and the United States – too strong and too one-sided for many Canadians – but enough Americans went to Victoria in the mid-nineteenth century that, a generation later, an Australian naturalist could complain that too many of the common names for animals and plants were not really Australian but American.[4] The eucalyptus that form a distinctive part of California landscapes are the most visible evidence of an extensive set of connections – botanical, zoological, and intellectual – that began between that state and southeastern Australia in the nineteenth century.[5] New Zealand legislators debated American ideas of conservation and imported American and Australian plants and animals. All the settler countries imported natural history's ideas, institutions, and practice from Britain in the nineteenth century. The American idea of vast wild country reserves and the British model of urban open space shaped the idea of a national park in the other three. In the twentieth century, ecology developed as a discipline in academic centers in Britain and the United States, and went from there to the others. American ideas and action influenced the early environmental movement elsewhere.

The ground of Anglo settlement has been the continuing process of discovery. It began with entries in ships' logs and continued through the measured prose of army and navy officers surveying coasts and interiors. Each generation of settlers added knowledge and lore, and had its maps, which mixed named and fixed features with ones observed and others conjectured or wished for, all embedded in the white space that gave scope for dreams. In Europe people lived in country they knew; these societies lived on land they were discovering. Our period is the ninteenth and twentieth centuries because this is when formal nature knowledge – bodies of knowledge that were also ways of organizing the world – guided and shaped that process. Such knowledge had profound effects on the settlers' understanding of their lands and their relation to them. Natural history provided the settlers with pictures of the land in maps and reports, and placed their local knowledge in a universal system that ordered plants and animals around the world. It also gave

[4] J. A. Leach, *An Australian Bird Book* (Melbourne: Whitcombe & Tombs, 1911), 1, 72–73, 74.

[5] Ian Tyrrell of the University of New South Wales has in press a major work on the connections between Australia and California in the late nineteenth century.

individual settlers the chance to participate in the advance of knowledge. Collecting specimens, forming local societies, and building museums, they gave the world evidence of their societies' growth and maturity, and established social ties with each other and the elite of Europe. Ecology, which developed in the early twentieth century, was equally universal, but it had a different social context and presented to the settlers a different understanding.

Three terms need definition before we go on: "Anglo," "nature," and "science." The first is certainly something of a misnomer. Settler populations included entire groups – Africans and Chinese – who were not European at all, and many Europeans from the Continent. In places these last formed separate colonies – Quebec and New Mexico are obvious examples – ones the Anglos overran. A large proportion of those who traced their roots to the British Isles would not thank you for calling them either British or Anglo. On the other hand, the Atlantic and Indian Oceans were not the waters of Lethe or impassable gulfs, and the settlers who formed the governments and societies came from Britain and looked to it as home or at least a model. This was true even in the United States, which, for all its political heresies, was a cultural colony well into the nineteenth century. Continuity persisted, despite immigration, because newcomers found it advantageous to assimilate the dominant ideas and attitudes. "Anglo" is no worse a cultural tag than most, and it has the merit of fixing attention on the common cultural base and the ideas and aspirations of the people with the money and the guns.

"Nature" is another sticky term. We use it for everything from the essence of human psychological identity (human nature) to the physical universe. Here we will take it as the culture's understanding of the land and the living creatures on it at the level of "unaided observation." It was what people saw without telescopes or microscopes, felt, smelled, fixed in memory, and thought of as their "direct experience" with the world around them. Certainly viruses and galaxies are as much a part of "nature" as kangaroos and oak trees, but it requires experts with specialized equipment to place the first two in our picture of the world and everyone understands the others before they encounter formal education and even if they never do. This, admittedly, involves a certain analytical and philosophical sleight of hand. The existence of a "natural world," separate from society, the ideas of "direct experience" and "unaided observation," and the mental constructs that result from them are as layered and theoretical as anything philosophers have produced, even if the assumptions are not as clearly articulated. For this analysis, though, we can take all that for granted.

Nature on this level can be roughly but usefully divided into plants,

animals, landscape, and climate. The first two pose few problems. The principles people use to decide what these are and to arrange them are so common that a taxonomist from New Jersey and a hunter from New Guinea would agree down to the level of what the scientist would call a species.[6] Landscape, which Donald Meinig calls "an attractive, important, and ambiguous term," we will take as the culture's picture of the land. It may include the landscape of geographers, which John Stilgoe defines as "shaped land, land modified for permanent human occupation," but more commonly it is the picture of the land people see as having significance for the nation and their culture.[7] It is what is presented in national myths of the "new country," in the landscape paintings hung in national galleries of art, the poems and stories printed in cheap paperbacks and taught to schoolchildren and found in exiles' recollections and memoirs of childhood. It is a continuing construction, shaped by each generation from the land, the culture, and experience.

Climate has something to do with temperature, rainfall, sunshine, and other atmospheric variables, but it has several meanings. It is, to start with, an economic and social reality. Our countries are what they are because European crops flourished there, and climate in this sense still dictates settlement patterns. It is also part of individual experience, a popular idea tied up with frosty mornings or harsh and sun-baked noons, wind, fog, snowstorms, and the rhythm of seasons. For much of our period it was also a physiological and even moral matter, for the Anglos retained classical beliefs about the links between climate and temperament. In the late nineteenth century Canadians saw the country's cold as a shield against moral dangers from their southern neighbors, and fifty years later Australian authorities fretted about the difficulties of settling their tropical North with white families.[8]

"Science" involves almost as many tangles as "nature." We apply the

[6] On the common basis of our construction of nature see Scott Atran, *Cognitive Foundations of Natural History* (Cambridge University Press, 1993), 15–80.

[7] Donald Meinig, "Introduction," in Donald Meinig (editor), *The Interpretation of Ordinary Landscapes* (New York: Oxford University Press, 1979), 1; John Stilgoe, *Common Landscapes of America, 1580–1845* (New Haven, Conn.: Yale University Press, 1982), 3.

[8] Clarence Glacken, *Traces on the Rhodian Shore* (Berkeley: University of California Press, 1967), 80–115, gives the ancient foundations of this. For late examples see I. Clunies Ross, "Blanks on the Map," in J. C. G. Kevin (editor), *Some Australians Take Stock* (London: Longmans, 1939), 83, and A. Grenfell Price, *White Settlers in the Tropics* (New York: American Geographical Society, 1939). This is late, though, even for Australia. See Warwick Anderson, "Geography, Race and Nation: Remapping 'Tropical Australia,' 1890–1930," *Historical Records of Australian Science, 11*, 4 (1997), 457–68. On Canada see Carl Berger, "The True North, Strong and Free," in Peter Russell (editor), *Nationalism in Canada* (Toronto: McGraw-Hill, 1966), 4–26.

term to systematic attempts to acquire and organize knowledge, from ancient Greek philosophy and Babylonian astronomy to modern research, or confine it to a particular set of disciplines using a particular method of analysis and standards of proof. There is the additional complication that while the intellectual activity of modern European science dates from the seventeenth century, "scientist" as a social role, job, and profession developed only in the nineteenth. It was not until 1833 that William Whewell coined the word "scientist," and most of the disciplines we recognize, along with professional standards, degrees, and formal training, date from the second half of the century. Strict usage, therefore, would require us to call Newton a "natural philosopher" and Darwin a "naturalist" (which is in fact what he was called and what he called himself).[9] Since the history of science and the status of scientists are not central to this argument we need only note the variety of meanings and the distinction between doing science and doing it for a profession (which will be part of this study).

Here we can take "science" as the organized, written knowledge of plants and animals and the land, supported by social institutions, that developed within European culture in the early modern period. It took two forms, which differed in their perspective, methods, and relation to society. The first was natural history, a distinct field by the eighteenth century and the organizing principle for the study of visible nature to the late nineteenth. The second was ecology. It developed as a discipline in the late nineteenth century and solidified, institutionally and intellectually, in the years between the world wars. Our primary concern, though, is not the development of these fields, but their use in the culture. They were successor, supplement, and complement to the settlers' folkbiologies, guiding and affecting but not displacing that unwritten nature knowledge that the settlers brought with them, developed in the new lands, and passed on to their children. They helped people understand. "The role of science, like that of art," said E. O. Wilson, "is to blend exact imagery with more distant meaning, the parts we already understand with those given as new into larger patterns that are coherent enough to be acceptable as truth."[10] It is this use that is our central concern – the settlers' continuing journey from knowledge of nature to an understanding of their place in the land.

All this was in the settlers' minds. The lands, though, were not, and they had their own imperatives. If settler dreams were all that mattered,

[9] On words associated with science see the *Oxford English Dictionary*, Second Edition (Oxford: Oxford University Press, 1989).

[10] E. O. Wilson, *Biophilia* (Cambridge, Mass.: Harvard University Press, 1994), 51.

North American wheat fields would extend north to Great Slave Lake; the Centre of Australia would be farms and pastures; and there would be any number of rural utopias scattered from the Canterbury Plains to Saskatchewan. People can think about the world in many ways and change it in many more, but it is not infinitely plastic. The settlers spoke of "new lands," but they were new only to them. In parts of Australia you can walk on the rocks of the vanished supercontinent of Gondwana, and even the Canadian Arctic, where the ground is still rising from the just-removed weight of the glaciers and all the plants and animals are pioneers, is in its ecology far older than any human records. Nor were the lands vacant or "unsettled." Except for New Zealand, where the Maori had landed less than a millennium before, humans had been shaping the lands in myriad ways for thousands of years. The Anglos saw lands before time and outside history, but the opposite was more nearly the case. They were people with little history, coming to lands that had much.

What was there? Let us review the ground – glance briefly, that is to say, at the current social construction. We will start with the area the Anglos settled first, North America. The main line of their expansion ran east to west. In what became the United States the beachheads were on an open coast, dotted with harbors, in well-watered and forested country, rich in game. The soil and climate supported familiar farming. In Canada the land was colder, rockier, and entered not along a broad coast but through the narrow passage of the St. Lawrence River. Americans also had an easier time reaching the central valley. They had only to cross the Appalachians, relatively low mountains whose passes had been used by humans and animals for thousands of years. Canadians faced the Shield, a thousand miles of Precambrian granite so forbidding that until railroads were built almost all traffic to the west detoured south around it into the United States.

Between the Appalachians (or the Shield) and the Rockies two gradients, temperature and rainfall, shape the country. They run at right angles. One, temperature, falls as we go north. South Texas is subtropical, and the bulk of the central valley is squarely in the temperate zone. At the Canadian border we are in cold temperate conditions. A few hundred miles north European agriculture dwindles out in the oat and canola fields of Alberta and Saskatchewan. Beyond is the boreal forest, then the tundra that stretches to the shores of the Arctic Ocean. Rain falls off as we move west. The eastern prairies are well watered, but as we climb the great outwash plains of the Rockies vegetables give way to corn, and corn to wheat, and only cattle graze in the mountains' rain shadow. In the United States the mountains divide to form the Great Basin, an arid region around the Great Salt Lake, and in the southwest

there are deserts. West of the mountains the Pacific stabilizes the temperature of the coastal plain and in much of it produces a Mediterranean climate, whose rainy winters and dry summers are much like those of southeastern Australia. From Oregon north there are vast temperate rain forests, stretches of fir and spruce that are the last strongholds of wilderness and the lumber industry.

Descriptions of North America commonly start with the continent in place, but Australia is so much a product of geology that we must begin with the breakup of Gondwana, some 60 to 80 million years ago.[11] It has drifted since, and for millions of years neither volcanoes nor plate collisions have thrown up new mountains or made new soil. It is the lowest and flattest of continents, and its soils, leached by sun and rain, are often deficient in minerals. The drift has largely been outside the global rain belts and it is, except for Antarctica, the driest continent. The result is a unique suite of plants and animals, adapted to drought, great variation in rain, fire, and poor soil. Eucalyptus dominates the plant communities, marsupials the fauna (for species larger than rats or mice). Until the Anglos arrived, there were no hoofed mammals to compact the soil and no carnivores larger than the dingo, itself an Aboriginal introduction.

The climate is dramatically different from that of Britain or North America. Only the southeast has what Anglos and their crops would consider sufficient rainfall, and it falls off quickly as we move off the coast. Most of the continent is arid or semi-arid, and the Centre stony and sandy desert. The northern edge, reaching into the tropics, is another world, with rain forests and a dramatic two-season year – the Wet and the Dry – but that was outside the mainstream of Anglo settlement.[12] Even today 80 percent of the population lives within fifty kilometers of salt water, most in a strip in the southeast running from Adelaide to Brisbane, and enormous areas are still marked on maps as "sparse fluctuating population" or "virtually uninhabited." Perth is the only city in the

[11] Two accessible examples of this modern narrative are Stephen Pyne, *Burning Bush* (New York: Henry Holt, 1991), 1–11, and Tim Flannery, *The Future Eaters* (London: Secker & Warburg, 1996), 20–52.

[12] Bureau of Meteorology, *Climate of Australia* (Canberra: Australian Government Printing Service, 1989). In no other country was exploration so hard or explorers so lauded. Lewis and Clark and MacKenzie are minor figures in North American history; Burke and Wills, who died on the return leg of the first south-to-north crossing of Australia, became national heroes. A. L. Burt made this point in commenting on the political development of frontier societies: "If Turner Had Looked at Canada, Australia, and New Zealand When He Wrote about the West," in Walker D. Wyman and Clifton B. Kroeber (editors), *The Frontier in Perspective* (Madison: University of Wisconsin Press, 1965), 59–77.

western half, Darwin (population 68,000 in 1988) the largest in the north. Canberra, established as a national capital, is the only inland city.[13] Even in imagination the Anglos have not ventured far inland. Movement, said a modern Australian novelist, Thomas Keneally, "is not westward to the center but eastward to the coast. Australia is periphery. It dreams of and yet abandons the core."[14]

Plants, the lack of land mammals, and the suite of unique flightless birds show that New Zealand is also part of Gondwana, but it is a very different part, not a continent but two small islands. They do not lie in Australia's latitudes but across the great trade winds of the Southern Hemisphere, which makes them temperate and well watered. Too well watered in places – parts of the west side of South Island average thirty feet of rain a year. New Zealand is geologically active; the grinding of tectonic plates shakes the land, springs and geysers dot the countryside, and the mountains are still rising. More than any of the others it has conventionally scenic landscapes, coastal plains backed by snow-capped mountains. On North Island there is the perfect cone of Mt. Egmont (Taranaki) and the peaks of Tongariro, while the great chain of the Southern Alps stretches down South Island.[15]

That is the almanac view. Let us, in imagination, get a little closer, take a mental tour of now-vanished landscapes – another current social construction. Our first stop, on a warm June day a few centuries before Columbus, is the woods of what will be central New Jersey. In the eighteenth century the Anglos will start turning it into farmland, lacing it with fences and dirt roads, and a century later the railroad will connect it to New York and Philadelphia. After World War II wheat will give way to potatoes and vegetables, and at the end of the twentieth century they will yield to ranch houses. Now we walk under enormous trees, slathering ourselves with mosquito repellent. Those are oak, says the ecologist with us, and that is a beech. The bird-watchers in the party ignore her to focus on the scarlet tanagers, Baltimore orioles, and warblers in

[13] "Physical Geography and Climate of Australia," 202–56, population density map after page 256; P. Laut, "Changing Patterns of Land Use in Australia," 547–56, all in Australian Bureau of Statistics, *Year Book Australia, 1988* (Canberra: Australian Bureau of Statistics, 1988). Canada is demographically comparable, its population clustered in a few strips along the border with the United States, but agriculture is possible in much more of the land. On the ecology of these inland pastures see Graeme Caughley, "Ecological Relationships," in Graeme Caughley, Neil Shepherd, and Jeff Short (editors), *Kangaroos: Their Ecology and Management in the Sheep Rangelands of Australia* (Cambridge University Press, 1987), 159–87. Caughley claimed in an interview with the author, June 1990, that equilibrium models of ecosystems were inappropriate and misleading in the chaotic Australian system. His viewpoint is not universal, but it is as least defensible.

[14] Thomas Keneally, *Woman of the Inner Sea* (New York: Doubleday, 1993), 179.

[15] *New Zealand Official Yearbook* (Wellington: Bureau of Statistics, 1992), 1–11.

the branches overhead. The ground smells like any forest, woody and damp, but this is not plowed land gone back to woods. For centuries trees have been falling and rotting in place, and it is as lumpy as an old mattress in a cheap motel. It seems the forest primeval, but our ecologist says that the dense patch we hiked around yesterday afternoon was a Lenape cornfield, abandoned fifteen or twenty years ago.

Skipping across the continent, we find everything changed at each stop. Along the Ottawa River we camp beneath spruce and giant white pine – the latter evidence of dry years and Indian fires a century and a half ago. The woods are aromatic, but with the piney odor of decaying conifer needles, that thick layer of duff we walk on and kick up under the trees. We have a gray jay ("camp robber," as it is known) and wood ducks on the river. At dusk moose come to drink, and at dawn a loon wakes us with a cry that really does sound crazy. A few hundred miles west of the Mississippi and well south of the Canadian border, we pitch our tents on a low hill amid grass that stretches to the horizon like some green ocean, waving and rippling in the wind. The children flush chunky brown birds that sail off on stiff wings – meadowlarks. Piles of dung and a scraped-out wallow show that buffalo are here, even if today they are over the horizon. In the afternoon there is a prairie thunderstorm, as near a timeless spectacle as the land affords. Great black thunderheads loom overhead in a sky that, off to the side, still shows blue. They swell over us, then comes a cool, hard wind, smelling of rain, a few scattered warning drops, and a downpour. In an hour the clouds disperse and the sun shines again. We are lucky – no hail with this one. Along the Virgin River in what will be Zion National Park we camp on a floodplain below sandstone cliffs, hear coyotes and a mountain lion at night. Early risers get to see the sun paint clouds and cliffs deep red and watch a golden eagle prospecting for rodents. The rest of us have to be content with the harsher light and the washed-out colors of the desert day. On the West Coast we camp under gigantic Douglas fir and Sitka spruce, and have around the camp a handsome bird with a crest, metallic blue on the back and brown on the head and breast. The easterners call it Steller's jay, the westerners just "jay." To the Kiwis and Aussies in the party it is another oddity. In bright sunshine on the beach we watch great swathes of fog drift off the sea and into the trees, visible evidence of the Japan current just offshore.

Crossing the Pacific we arrive in Australia at twilight and set up camp near a billabong (water hole to the Americans) in what will be western New South Wales. It is winter here, and we gratefully take to our sleeping bags after supper to study the "wondrous glory of the everlasting stars" (a line from Banjo Paterson, author of "Waltzing Matilda," con-

tributed by one of our Aussies).[16] We can all pick out that emblem of these lands, the Southern Cross – a striking, kite-shaped formation – but the Aussies have to tell us the rest. When the moon comes up, two days past full, the North Americans eye it with suspicion. Yes, it does look different. We are in the Southern Hemisphere and seeing its face at a different angle. In the morning the Aussies and the family of Kiwis with us remind us that the sun is in the north, not the south. Walking downslope to the billabong, our westerners find the land familiar at first glance but strange on inspection. What looks like bunch grass is not; the soil is powdery and strange-smelling; and the trees seem thin and straggly, with the merest scattering of foliage. No kangaroos today, but we see a flock of galahs, huge parrots with dusky gray backs, rose breasts, and absurd topknots, circling and landing in great noisy groups.

Along a small stream on the south coast plain, in what will be Anglo farmland and then Melbourne suburb, we get a wake-up call from a kookaburra. The maniacal laugh is as bad as the loon's. It is also known, our Aussies tell us, as Bushman's Alarm Clock. Someone mutters that it looks like a kingfisher on steroids. In the woods the trees are scattered, strings of bark hang on their trunks, and the leaves crunching underfoot have a faintly medicinal smell. On a nearby stream a swan is swimming, graceful and swanlike, but coal black. The exploring children, silent for once, have located something even more interesting. A small furry animal, its webbed feet sticking out at absurd angles, is stirring up the mud at the bottom of the stream. It is a platypus straining the mud for its food. Notice, our ecologist says, that sparrow-sized kingfisher (an azure kingfisher) perching on a nearby twig. It is beautiful; deep blue on the back, orange on the breast and belly. It is watching, she goes on, for minnows the platypus disturbs. Sure enough, there is a loud "plop" as it dives, and before the rings have spread across the stream it is back on its perch. A quick wiggle, a swallow, and it resumes its watch. The platypus surfaces to lie spread-eagle, chewing and swallowing its mouthful. Then it heads down again, diving with a grace that seems out of place in so odd-looking a creature. Odd to you, say the Aussies.

In New Zealand we camp on a hillside fifty miles south of Auckland. The Anglos will make this pasture, but now it is the forest primeval; the Maori have not yet landed. At night we can hear a moa crashing around in the bush, and our (human) Kiwis confidently identify a set of whistles and hoarse calls as the real thing. In the morning we find another landscape superficially "normal" to North Americans, strange on closer

[16] It comes from "Clancy of the Overflow."

acquaintance. Some of the trees look "cabbagey," as someone puts it, and the giant ferns remind the middle-aged members of the party of schoolbook illustrations of the Age of Dinosaurs. The hiking is the hardest since New Jersey; the bush is thick and tangled, and brushing against one of the drooping vines or a fern means a shower. A moa track makes for easier going – as long, someone grumbles, as we don't meet the moa. A hundred meters on the slope and a few hundred on the flat bring us to a small stream, where we jump a pair of large, white-headed ducks (paradise shelducks). Their "zeek-zeek" and "zonk-zonk" alarm calls echo over the valley as they flap off. We can see a plume of steam where a small hot spring empties into the stream and smell the hot, mineral-laden water. There are no aquatic plants for some yards downstream of the junction, and a crust of minerals lines the bank and bottom. Otherwise it looks all right. The adventurous find a spot that is warm but not hot and declare that all the place needs is a proper pool and a bathhouse. On the way back our guide finds a silver fern. Sure enough, it is just like the emblem on his All-Blacks rugby shirt, and the underside of each leaf is as silver as if it were painted.

This exercise reminds us of what was, but it also illustrates one of the basic themes of this work: that we construct our world. We can imagine hiking in a forest that does not exist by extrapolating from our experiences of hiking in those that do. We have all seen the stars in the night sky, watched and listened to birds, frogs, and insects, run our hands over rocks and trees, felt the breeze on our skin and the ground under our feet, and smelled woods, swamps, streams, and dust. We all added to that information from the culture. Those who had not seen a platypus or a moose no doubt called up pictures from books, television, or films. We automatically incorporated as well the more specialized knowledge of science. Who thought of geology when the word "floodplain" was mentioned? Even those who did immediately translated that concept into a mental picture. We do this not only with landscapes we imagine. We invest landscapes we see with significance because of what we know. The thrill of wilderness is not just the trees or prairie in front of us but the knowledge that the land stretches for miles without human habitation – or that there are wolves out there. The beauty of the Grand Canyon comes from color and form but also from knowing that this is the river's work over ages and that the rocks reaching into the depths show ages before that. The culture does the same thing, though on a different scale and through a different, social process. People agree on what the land "really" looks like and what it "really" is. They put themselves into this picture, not as tourists but as active forces and as people shaped by the land. They ask what this land and their life on it means. They listen, in the Crow elder's phrase, to the spirits' voices.

So much for lands and settlers. What about the topography of the book? The main line is not quite the historians' beaten track. We have customarily focused on the nation or a group within it and have been suspicious of work on larger units, unless they had some obvious political or social unity. There are good reasons for that, and they raise questions about this enterprise. New Zealand has a land area 3 percent of Australia's (270,000 square kilometers against Australia's 7,682,000). Canada (9,970,000) and the United States (9,363,000) are even larger. Population has a similar range: there are now some 3 million people in New Zealand, 16 million in Australia, 26 million in Canada, and 260 million in the United States. People are fairly evenly distributed in the United States and New Zealand, but most Canadians live near the U.S. border and most Australians by the sea in the southeast. New Zealand comprises two islands, Australia has its own continent, and the other two divide most of North America. New Zealand is temperate, and so is most of the United States, but almost all of Australia is arid or semi-arid, and Canada stretches from the edge of the Temperate Zone to the Arctic. The Anglo history of North America goes back two hundred years before Anglos arrived in Australia, and the United States was a nation sixty years before the Treaty of Waitangi established a British colony in New Zealand. What comparisons can we make among countries so disparate in size, population, and history? They have, as well, internal divisions. Can we speak of "an" Australian response to the landscape or "the" American attitude toward wilderness, even at a given time, without identifying culture with nationality, falling into geographic determinism, or producing conclusions that are only truisms?

We should be able to and there are good reasons to try. We can avoid the pitfalls of essentialism – the fallacy that there is some "real" core of the nation or group – by recognizing that national attitudes are a matter of statistics. Each Anglo society had the full range of ideas and attitudes, but in different proportions. There may, for example, have been some late-nineteenth-century Australian seeking transcendence in the bush with the same fervor with which John Muir sought it in the Sierra, but Muir had many followers and our hypothetical Australian none. As for trying, it is abundantly clear that there are many discussions about nature in these countries that are variations on common themes. Everywhere people spoke of parks, wilderness, wildlife, and the environment. Even without their references to events and ideas from elsewhere, it is clear they were talking about the same things, but only the culturally tone-deaf could confuse an Australian discussion of wilderness with an American one, find the New Zealand environmental movement just like the Canadian, or think the term "national park" meant the same thing in any two of these nations. Taking these societies as a group allows us

to make comparisons. Seeing how the same idea met different fates in different lands can help us separate the influences of land and society, what is unique to each one, what is part of a common cultural inheritance. It also allows us to deal with topics that not only cross borders but exist because of them. National studies miss or slight the networks that ran among these countries and are part of their histories.

Science is a more familiar trail, but we will not go down the familiar turnings. The subject here is not science as such, but the interaction of popular knowledge and expert knowledge. This is a tangled topic, for people have always named plants and animals, and Linnaean taxonomy built on the concepts of folktaxonomy, which, in fact, remain at the base of popular and scientific ideas today. Besides, the division between expert and popular knowledge has never been complete. Natural history was an accessible science. Everyone could understand its central task – the arrangement of life's forms – and join in collecting specimens. Ecology built on that and, despite its use of all the apparatus of modern academic specialization, has closer ties to popular understanding, and is more part of common culture, than sciences that examine nature on other levels. It almost has to, for nature on this scale is the world we live in and learn about as small children. We have no common human experience at smaller or greater scales, and so physicists, chemists, and astronomers can develop theories and concepts with no apparent ties to common sense. There is also the common human tendency to use nature at this level as a model and moral guide. There is little use saying people should not do this; the practice goes back to the Preacher's exhortation to "go to the ant, thou sluggard" and forward to modern environmentalist appeals to nature's processes as a model for responsible action.

The development of knowledge, though, has created some barriers between bodies of knowledge. Folkbiology was local and instrumental knowledge, passed on in bits and pieces to the young in the process of acculturation. Natural history, a more extensive and formal learning, was forced to resort to institutions – private societies – and its own means of communication, their journals. Its theories, although quite sophisticated (Darwinian evolution), remained close enough to the public's that educated people could read and understand the field's major works (which helps account for the uproar over Darwin's ideas). Being a natural historian, however, was not a career, and there was no professional training. Ecology was, intellectually and institutionally, a step beyond, a specialized discipline, housed in university departments, its research the profession of people with advanced training, its theories increasingly couched in technical terms. It was less open than natural history even on the national level. All the settler societies established

societies and museums to pursue natural history, but only the United States and Britain had the money to support ecology's infrastructure of education and research.

This line, like any other, requires neglecting some things or treating them in part or in passing. The most obvious are the full histories of natural resources and nature policy in any of these countries. The same is true of the sciences. We see formal knowledge as it bore on the settlers' efforts to understand and live with their lands and as they interacted with popular ideas. Concern with formal nature knowledge means there is little on the period before 1800. Putting the dominant group at the center leaves out the influence the earlier inhabitants had on the Anglos or the contributions Africans made to popular North American ideas. The histories of other European enclaves, notably the French in Quebec and the Spanish in the American Southwest, are omitted. Geographic coverage is necessarily uneven. Canada gets short shrift, not because it is not important but because it is so entangled with the United States (U.S.–Canadian interaction deserves, incidentally, far more serious attention from environmental historians than it has received). So does New Zealand, which was too small a society to support an independent dialogue on many of these matters. It appears as developments in the islands show themes in settler development. Writing one book, though, requires not writing six or seven others, and there are good reasons to start with this one. Understanding what the Anglos thought and did is a prerequisite to a full environmental history of each country and of the group they formed, and seeing them as a group points to an important (and underappreciated) part of their history.

Let us leave topography and what topics I do not consider and look at the main lines of the argument. That is the layering of knowledge and the shifts from one system to another against the backdrop of settlement. The first two chapters deal with natural history in the great expansion of the nineteenth century. One takes up the field as a science and the uses to which the settlers put it – organizing their knowledge, placing it in the growing body of European nature knowledge, revealing the land and its resources, offering individuals the opportunity to contribute to their nation's greatness and form connections to the metropolis. The next discusses the settlers' less organized attempts to come to terms with the country, programs not closely tied to formal knowledge but based in natural history's perspective and ideas. The focus is on two important enthusiasms of the second half of the century, the fad for importing birds and mammals and the fashionable recreation of sport hunting. These had biological and social consequences, but they also show deep-seated attitudes toward nature and ways of relating to it.

The next three chapters deal with the end of expansion and the

generation that grappled with the aftermath during, roughly, the years from 1880 to 1930, a period in which the settlers had to face limits on their action and knowledge and in which they began to ask more consciously what value the land had for them. The limits of their power appeared in debates that began in the 1860s and culminated in the conservation movement of the early twentieth century. A second current, the use of native nature for national identity, began to flow in earnest toward the end of the century. It was more diffuse, appearing in everything from the use of native species as national symbols, to nature literature and landscape painting, formal and informal nature education, the boom in outdoor recreation, and the development of national parks. A third development was the change in science, which was intellectual, institutional, and social. With the exhaustion of natural history there was a shift from the observation of organisms to laboratory study of the processes of life, and even in the field attention shifted from nature's parts to their relation on the land. Academic departments replaced museums and societies as the locus of research, and professionals replaced amateurs. Nature knowledge became more and more the province of experts.

Three more chapters, overlapping with the last set, develop changes in popular and scientific ideas in the first half of the twentieth century. There was a renewed debate about human power over nature, which ran the gamut from vast optimism (in the 1920s) to depression and despair (in the 1930s). It was in some respects like the battles of a half-century before, but underneath were new currents. Another continuing theme is the exploration of nature's value and place. Some elements of this, like the boom in Australian bushwalking, harked back to ideas from the boom of the late nineteenth century. Others, particularly the debate in North America over the place of predatory mammals, showed new ideas. The final chapter of the section treats the emergence, in the interwar years, of a new perspective on nature among a small group of ecologists, game managers, and enthusiasts and tells how a few pushed beyond policy to apply this view to humans' use and treatment of the land.

The final two chapters treat the impact of their ideas on the public's, the rise of environmental consciousness and an environmental movement. After World War II the institutional apparatus of ecology and applied ecology – a network of academic departments and government agencies – spread the field's perspective to scientists throughout the Anglo world. School courses, books, movies, and television shows did the same for an increasingly interested public. In the late 1960s the union of knowledge and concern put the defense of visible nature and its value to the settlers on a new foundation. We are now picking over the experience and legislation of the first generation of environmental

action, in the early stages of what promises to be a revolutionary transformation of our attitudes toward the land.

This narrative necessarily dwells on the destruction the settlers brought to their lands, but it seeks to point to a deeper, less visible story: the ways in which the lands shaped the settlers. The Anglos came as conquerors. Seeing the land in European terms, they tried to make it like their old homes. They remained to become settlers and to value the land for what it was, or had been. Now we debate whether we must, should, or can become native, learn to live with as well as from the land. If we do not and the ecological systems of the lands collapse, the settlers' search for a place will be but a minor note in their history – assuming anyone has the leisure to write history. If, on the other hand, we do learn wisdom, the tale of the land speaking to the Anglos and their listening to it may become the centerpiece of the settlers' stories.