



## Nature and morality from George Perkins Marsh to the millennium

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This essay is a revised version of the first *Journal of Historical Geography* lecture, delivered by the author in 1998 at the Annual Conference of the Royal Geographical Society with the Institute of British Geographers at the University of Surrey. The lecture, which was followed by a response from Catherine Nash, also published below, considered the life and works of George Perkins Marsh, particularly his *Man and Nature* (1864), the first comprehensive study of human environmental impacts. This remarkable text engendered worldwide awareness of the ill-effects of human agency, along with efforts to repair the damage and conserve the fabric of nature. Most noteworthy was Marsh's stress on the unforeseen and unintended consequences, as well as the heedless greed, of technological enterprise. Despite recent tendencies to belittle Marsh's insights as derivative, élitist, anthropocentric, or narrowly utilitarian, he remains modern environmentalism's pre-eminent pioneer. Preparation of a revised life of Marsh provides an occasion to reassess the history of views of and relations with nature. Since the 1950s, confidence in our ability to monitor and manage the environment has succumbed to mounting fear in the face of ever more horrendous threats and to rising doubts that science and society can prevent ecological disaster. Deforestation, flooding, and soil erosion, though far from cured, give way to chemical poisoning, nuclear fall-out, and global warming as foci of major concern—concerns more globally interrelated, less readily visible, longer-delayed in their onset and longer-lasting in their ill effects, and perhaps more lethally irreversible than the sterile earth Marsh warned might be nigh. Notwithstanding these changed perspectives, Marsh's views on nature, human agency, stewardship, and public environmental education offer insights of potential value today.

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### Introduction

*Man and Nature; or, Physical Geography as Modified by Human Action*, by the American scholar-diplomat George Perkins Marsh, was published in 1864. Marsh intended it to show that “whereas [others] think the earth made man, man in fact made the earth”.<sup>[1]</sup> But in so doing, he warned, man might destroy both himself and the earth. *Man and Nature* bared the menace, explained its causes, and prescribed antidotes. To restore and sustain global resources, warned Marsh, we need to become aware how we affect our environment.

### Impact of *Man and Nature*, 1864–1998

More than Marsh had dreamed, *Man and Nature* ushered in a revolution in how people conceived their relations with the earth. His insights bred public awareness of how

much, and at what cost, human action transforms the globe. Many before Marsh had pondered the extent of our impact on one or another facet of nature. But most took it for granted that such impacts were largely benign, that malign effects were trivial and ephemeral. None had recognized that these effects, good and bad alike, were ubiquitous and intertwined. Marsh was the first to fuse all human agencies into a somber global picture, and “the last person individually omniscient in environmental matters”.<sup>[2]</sup> The sweep of his data, the clarity of his synthesis, and the force of his conclusion made *Man and Nature* an almost instant classic. Marsh had “triumphantly . . . investigat[ed] a subject so abstruse, so vast, and so complex”, attested his memorialists in 1882, “that it is fair to say he had no rival in the work”.<sup>[3]</sup>

*Man and Nature* initiated a radical reversal of environmental attitudes. In tandem with the tree-planting crusade that swept the United States in the Arbor Day movement, Marsh’s warnings led the American Association for the Advancement of Science in 1873 to petition Congress for a national forestry commission. From this emerged a forest reserve system in 1891, then watershed protection, eventually a federal conservation program for natural resources. Every American forestry leader was inspired by *Man and Nature* and sought Marsh’s aid. Terming Marsh his “ideal American scholar”, the explorer Ferdinand V. Hayden carried “his splendid book . . . all over the Rocky Mountains”. Gifford Pinchot, the first US conservation chief, judged *Man and Nature* “epoch-making”.<sup>[4]</sup>

Europeans put Marsh’s precepts to use sooner than Americans. The French geographer Élisée Reclus owed much to Marsh for his *La Terre* (1868).<sup>[5]</sup> Italian foresters (Siemoni, Boccardo, Di Bérenger) found Marsh’s work of huge value; Italy’s 1877 and 1888 forest laws embody citations from Marsh, who persuaded Italians to stress restoration above mere preservation.<sup>[6]</sup> *Man and Nature* inspired Dietrich Brandis and others stemming forest destruction in India; echoing Hayden, forest conservator Hugh Cleghorn told Marsh “I have carried your book with me” into the Himalayas, Kashmir, and Tibet. Before 1900, Marsh’s insights inspired scholars and conservers in Australia, New Zealand, South Africa, and Japan.<sup>[7]</sup>

Ever modest, Marsh was pleased that *Man and Nature* had “accomplished its end”, he wrote to Spencer Baird, Secretary of the Smithsonian Institution, “which was to draw the attention of better-prepared observers” to the subject.<sup>[8]</sup> But not for another century, if then, were any better prepared than Marsh himself, who went on updating his book until his death in 1882. *Man and Nature* long remained the only general work in the field. The third, 1884 edition was last reprinted in 1907, on the eve of the White House Conference that led Theodore Roosevelt to create a national conservation commission.

After a period of relative neglect, *Man and Nature* was resurrected by those made newly aware of the perils of floods and soil erosion by Dust Bowl and other disasters of the 1930s. Through the agency of the Scottish planner Patrick Geddes, the polymath reformer Lewis Mumford “rediscovered” the book as early as 1924.<sup>[9]</sup> Mumford and the geographer Carl Sauer led scholars from a score of sciences to reassess ‘man’s role in changing the face of the earth’ at a 1955 ‘Marsh Festival’ in Princeton. Marsh’s *Earth as Modified by Human Action* was more portentously updated as *Earth Transformed* at a 1987 Clark University symposium. The 1998 advent of the Marsh-Billings National Historical Park in Marsh’s native Woodstock, Vermont, marked an apogee of American environmental concern by celebrating its pioneer. Almost every conservation text today salutes *Man and Nature*, in former interior secretary Stewart Udall’s words, as “the beginning of land wisdom”.<sup>[10]</sup>

My 1958 biography was one offshoot of these renewals. I was a student of Sauer,

who had nominated Marsh for biographical inquiry in 1941. My 1965 reprint of *Man and Nature* fed the environmental reform movement launched by Rachel Carson and Aldo Leopold. Since the first Earth Day in 1970, *Man and Nature* has remained a classic text, each new crisis rekindling its relevance. As Lewis Mumford wrote two generations ago, *Man and Nature* was indeed “the fountain-head of the conservation movement”.<sup>[11]</sup>

In forest conservation, watershed protection, river regulation, and other specifics Marsh had both forerunners and followers. But not until the 1960s did anyone else treat all these topics as supremely interrelated. Knowledge of and concern about environmental degradation have greatly advanced since Marsh’s day; anxiety about our impact on nature extends to realms undreamed of by him. But Marsh’s analysis of forest and watershed control remains largely valid, his broad cautions “still worth listening to”.<sup>[12]</sup>

### **Comparing environmental attitudes across time and space**

What is the relevance of Marsh’s environmental insights today? Why bother with this 1864 environmental tract “full of facts that have since been shown to be erroneous [and] conclusions that went sour”, as even an admirer wrote a century later; all in all, “a doctrinaire, maudlin, cant, overripe, moralistic coughdrop of a book”.<sup>[13]</sup> Marsh’s cautions have been overtaken by time, superseded by other issues, other intuitions, other modes of coping with still graver perplexities. To some moderns Marsh comes across less as a magisterial polymath than as a cranky Yankee.

When William Cronon offered to reprint my biography of Marsh, I opted instead for a complete rewrite. If Marsh mattered in environmental history, his life warranted retelling. A fresh picture was called for not just because a further half-century of data had surfaced. Marsh needed to be reexamined through the lens of new ideas, new attitudes, new insights on environmental change.<sup>[14]</sup> Any such account must also be tailored for readers whose own assumptions about nature, human nature, and gender depart markedly from those of 50 years ago. Renowned in his time as a women’s rightist, Marsh none the less voiced ecological wisdom in terms of what he called that “great question, whether man is of nature, or above her”, concluding that “wherever man fails to master nature, he can but be her slave”.<sup>[15]</sup>

What views of nature and man were current when *Man and Nature* first appeared? How did they differ from views a century later, and from those that have since unfolded? Such comparative queries are crucial to our understanding. The globe’s current ailments seem as unlike those of the 1950s as theirs were to Marsh’s mid-nineteenth century cosmos—unlike in the kinds and extent of perceived risk, unlike in prospects for curtailing and repairing damage, unlike in modes and costs of reform, unlike above all in our judgments of natural and human agency.

Comparisons across time and space are ever fruitful. Crucial to Marsh’s own awareness of human impact and reform needs were parities and disparities between ancient and modern environments, Old World and New World use and abuse of nature, Alpine and Appalachian reactions to degraded landscapes. Similar physical processes; different cultural and historical responses. The task Marsh set himself was to account for the differences and then to bridge them, so as to engender mutual awareness and reform.

Each society’s ways of dealing with its landed legacy are spun in a web of custom and tradition resistant to changes mandated by new circumstances. Hence Americans schooled in a rhetoric of wilderness conquest found it hard to recognize the ill-effects

of so doing. In detailing the longer and more devastating Old World saga of unwitting destruction, Marsh sought to open American eyes to their own similar impacts. In this he succeeded far better than he had expected, though ensuing reforms were inadequate to stem ever more rapacious gutting of resources.

Since Marsh, Americans and Europeans alike have become increasingly aware, anxious, and pessimistic about slowing, let alone halting, much less reversing processes of degradation begun by our ancestors and aggravated by ourselves. Tracing such concerns from Marsh's day to our own, I aim here to scrutinize today's environmentalism in the light of precursors' views and deeds. Marsh urged the New World to heed evils endured and reforms instituted in the Old. We today might likewise learn from the triumphs and setbacks of those who used or misused, ravished or restored nature on the basis of assumptions quite unlike our own. We cannot regain the faith in technology and community that made earlier reform efforts seem radiantly worthwhile. But we can benefit from an awareness of what generated and sustained that faith.

### **Man and Nature and nineteenth-century reform optimism**

Marsh in the 1860s castigated earth's despoilers in invective as searing as Rachel Carson's in the 1960s. But *Man and Nature* unleashed no such envenomed reactions as did Carson's *Silent Spring*. No entrepreneur or industrialist, planter or hunter, challenged Marsh's accusations of reckless greed, defended the gutting of forests or the slaughter of wildlife as essential to economy and society, or dismissed his jeremiads as traitorous hysteria.<sup>[16]</sup>

Why were there no such rebuttals? Because Marsh's world was in many ways unlike that of a century later. In the first place, Marsh framed his warnings within an accepted goal of environmental exploitation; he disputed not the desirability of conquering nature but the bungling way it was being done. Although Marsh's ecological admonitions were revolutionary, their underlying philosophy inspired broad agreement. They underscored Biblical and Enlightenment premises that mankind's mission was to subdue and domesticate nature.

Second, none took personal offense: for all Marsh's moralistic censures ("joint-stock companies have no souls; their managers . . . no consciences"),<sup>[17]</sup> he inveighed against mankind in general, not against particular entrepreneurs. Third, no media broadcast his warnings throughout the world or prompted counterattacks from accused malefactors, such as are spurred by Greenpeace and like groups today. Fourth, Marsh's corrective measures—reforestation, controlled grazing, stabilizing sand dunes, monitoring environmental impacts—seemed to entail few economic burdens and to require no draconian remedies. Enlightened self-interest underwrote most of his prescriptions.

Fifth, no-one in Marsh's day quarrelled with his stress on stewardship, though few exploited resources in that spirit. So canonical was the credo of future good that the most avaricious get-rich-quick resource strippers deployed stewardship rhetoric. Yet the industrial pillage and conspicuous waste of the late nineteenth century roused disquiet; many feared essential resources might be depleted, crippling enterprise. Hence the zeal for forestry reform, for water management, and for protecting public lands in the common interest.

The reforms then sought seemed much easier to achieve than do their counterparts today. Conservers back then were not preservers; they sought prudent resource use, not no use. Entrepreneurs often stymied or breached government controls, but many welcomed conservation as cheap and easy: cheap because public lands could be sold

or leased to pay for them; easy because technology and public agencies were, on the whole, trusted as capable and honest. Faith in applied science harnessed to public good was then at its peak.

Gleaning what they wanted from *Man and Nature*, conservers adopted only half Marsh's analysis and a fraction of his reforms. They welcomed his positive messages—reform was clear-cut, widely beneficial, and allied with productive growth. They ignored or forgot his negative admonitions—watershed protection, inviolate woodlands, irrigation cautions, warnings that unintended impacts might have irreparable consequences. Few feared Armageddon—Marsh's graphic preview of an earth as barren as the moon, threatening the extinction of mankind.<sup>[18]</sup>

Indeed, *Man and Nature* in some respects did less to restrain than to rekindle optimism. Railroad promoters, land speculators, even scientists misread it to buttress the fantasy that tree-planting would water the plains, even convert the Great American Desert into a well-wooded land. "Marsh . . . was bent to give scientific respectability to the writings of rainmakers", *Man and Nature* "pillaged and distorted" for proof that rainfall followed afforestation.<sup>[19]</sup> Even now some saddle Marsh with the view that trees bring rain.<sup>[20]</sup>

Quite to the contrary, Marsh saw no evidence that forests increased precipitation. Rebutting a rain-follows-the-plough dessicationist, Marsh termed it "improbable" that forests exercised "any appreciable influence on the total amount of precipitation". He dismissed evidence for even local effects on rainfall as "vague and contradictory". Marsh shared a colleague's dismay that ignorant advocates "confound . . . the effect of denudation on rainfall, which may be a myth, & its effect on the disposal of the water after it has fallen which is as clear as any fact in nature".<sup>[21]</sup> In like fashion, Marsh's irrigation warnings were ignored by American enthusiasts who begged to be shown the wondrous benefits, not the regressive side-effects, of water management in Italy.<sup>[22]</sup>

### **Technocratic hubris and scientific expertise**

Environmental optimism endured well into the new century. To be sure, reverence for wild nature gained ground, notably in America. Environmental concern bifurcated into opposed camps, one primarily economic, the other inspirational. The latter focused on wilderness aims and areas that at the time impinged little on resource use—though when they did clash, as at Yosemite's Hetch Hetchy in 1914, antagonists did not spare their vitriol.<sup>[23]</sup>

But few who thronged to spectacular Yosemite regarded untouched nature in general as a virtue. The received view remained that of T. H. Huxley and Herbert Spencer, who held nature ruthless, cruel, savage, wasteful. "Visible nature is all plasticity and indifference", wrote the philosopher William James; "to such a harlot we owe no allegiance".<sup>[24]</sup> In taming the wild, men both improved their surroundings and advanced morality.

This echoed Marsh's views of human primacy but ignored his fears of exploitative damage. Even conservationists saw environmental impact as mainly benign; injurious side-effects could be cured by curbing entrepreneurs. Though the environment was ever more drastically altered, most changes still seemed improvements, and few doubted that science would soon rectify any damage.

Earth scientists persuaded that nature's might vastly exceeded man's shared resource managers' faith in progress. Mankind could not seriously harm the globe. Whatever technology's impact, humans remained a minor geological force; the gravest man-made

disasters meant only small and temporary setbacks in progressive mastery of an infinitely resourceful earth. While environmental determinists thus felt secure in nature's ultimate power, devotees of progress went on believing that science could safely enlarge its power over malign nature.<sup>[25]</sup>

Typical of the prevailing view of technology as progressive and benign was Freud's 1929 accolade to the conquest of nature:

We recognize that a country has attained a high state of civilization when we find . . . everything in it that can be helpful in exploiting the earth for man's benefit and in protecting him against nature . . . The course of rivers . . . is regulated. . . The soil is industriously cultivated . . . mineral wealth is brought up assiduously from the depths. . . wild and dangerous animals have been exterminated.<sup>[26]</sup>

How quickly and sharply such views change! Just one life span earlier, Marsh lauded mastery over nature in terms much like Freud's but cautioned vehemently against its manifold risks. Just one life span later, many reject Freud's premise and his arrogant anthropocentrism.

Not even the Dust Bowl turned conservationists against entrepreneurial conquest. The past was blamed; the present was smarter. Soil conservation and shelter belts of the 1930s and 1940s made heedless waste a thing of the past. Though technology since Marsh had accelerated environmental change, most human impacts were still adjudged purposeful and beneficial. Even the 1955 symposium honoring Marsh's prescient ecological warnings made light of the ill effects of human impacts. With few exceptions optimism prevailed. Many showed extreme complacency in the face of threats that now seem evident. Humans were thought incapable of significantly changing global climate; nuclear-fission wastes were wholly benign; wise management would rebuild impoverished soils. Why worry about nuclear by-products; past fears of technology had always come to naught. In sum, environmental impacts scared only scientific idiots and crackpots.<sup>[27]</sup> Scientists disparaged doomsters for "lamentable lack of faith in man's ability to control his future with new technology".<sup>[28]</sup>

### **Mid-century public fears**

These views did not fairly reflect widespread 1950s qualms. Hiroshima had aroused dread of global annihilation. Many feared that 'tinkering with nature' through antibiotics, destroying 'uneconomic' plant and animal species, introducing foreign predators, even prolonging human life spans might unleash biological havoc. These gloomier perspectives were consonant with the equilibrium model of ecology developed by Frederic Clements in the 1920s. Clements echoed Marsh's view of nature—but not of man. He and his followers saw nature most fruitful when least altered. Ecosystems left undisturbed gradually attained maximum diversity and stability. Extractive spoliation thwarted the fruition or shortened the duration of this beneficent climax; technology did not improve nature but corrupted it. These evils emanated only from so-called advanced cultures, however. Exempt from blame were primitives whose "nurturant tribal ways, integrative communitarian values, and rich interplay with nature" respected environmental balance. Heeding their wisdom might help restore 'natural' environments fit to live in and to hand on.<sup>[29]</sup>

This ecological mystique became a tenet of faith. Aldo Leopold's 'land ethic'—"A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise"<sup>[30]</sup>—became and largely remains conservation gospel. The virtues of stability and passive non-interference mirrored



reformers' views about human nature, too. Ecological utopia was a moral order. To "replace the chaos of a world torn by human greed and voraciousness with a well-ordered moral universe", we were adjured to limit population, technology, and consumption habits.<sup>[31]</sup>

Ecology itself, to be sure, had long since disowned much of the Clementian paradigm. Even in the 1950s it was mainly non-ecologists who extolled equilibrium states, maximum diversity and stability, and non-interference. Yet environmental-impact literature still deploys these outdated perspectives, the succession-to-climax model still dominates much biological thinking. Nature is cast as normative good, technological man as evil destroyer.<sup>[32]</sup> This all but reverses the perspective of Marsh, who, for all his invective against man induced damage sought and praised the conquest of nature.

In sum, the concept of nature as an unfinished fabric to be perfected by human ingenuity gave way to the view that technology debased nature and endangered its benefits. Interference was demonized, wilderness venerated. In the state of nature envisioned by the Enlightenment, by Marsh, and by his technocratic successors, rational managers would cultivate an ever more artificial environment. In the state of nature idolized by twentieth-century ecological reformers, human impact would dwindle until the environment regained stability. By the 1950s, 'ecology' was a token of right thinking even in government agencies.<sup>[33]</sup>

Apprehensions about biological chain reactions along with fallout, radioactive-waste disposal, and genetic mutations were already widespread a half century ago. Their absence from the *Man's Role* symposium highlighted the disparity between expert and public opinion. *Man's Role* envisaged no role for a concerned public, whose worries were nowhere addressed. It reached out not to people in general but to "scholars in oncoming generations".<sup>[34]</sup> To Marsh himself, ever eager to trumpet warnings among the broader public, this would have seemed a signal defect.

### **Modern concerns: global, interrelated, invisible, interminable**

Public voices have become prominent in environmental discourse since the 1950s. Popular pressure has triggered environmental research, monitoring, national and local legislation, and international regulation. Environmental advocacy reflects three postwar developments. First, highly publicized warnings of the limits of earth and the fragility of the biosphere have brought these concerns to a wider public. Second, Western affluence has led to demands for environmental quality even at the cost of productivity. Third, personal goals have persuaded many to take active roles in environmental reform—especially since experts have lost their aura of omniscience and integrity.

Public activism, like impact control generally, displays differing tempos. Experts and the public, rich and poor, urban and rural, America and Europe, capitalist and socialist states, the developed and the Third World exhibit disparate types and levels of concern. Nor is consciousness of human impact a continuously progressing saga. Unlike the gains of technology, awareness of their environmental effects is not cumulative. Alarms dissipate as crises die away; levels of concern are rarely sustained between crises.

Conflicting attitudes toward nature shroud long-term trends in doubt. While many jettison faith in nature's infinitude and in human omnipotence for the belief that "humans must live in harmony with nature in order to survive", others still consider mankind was created to rule over the rest of nature and feel that "technology got us

into environmental problems, but technology will get us out”.<sup>[35]</sup> Substantial majorities would eliminate toxic pollution, protect endangered species, and limit economic growth to enhance environmental quality—but strong and steady support for these aims is rare. The gravest public fears are hard to convert into electoral policies. “Unless God opens an ozone hole directly above the Palace of Westminster, or melts the polar ice-cap just enough to bring the Thames lapping round the chair-legs in the Members’ Bar”, concludes one analyst, “Green issues will never rank with the central concerns of British politics”.<sup>[36]</sup>

Yet the surge of environmentalism in this half century is patent. And environmental impacts are increasingly seen as global and interrelated, complex and unknowable, long-lasting and perhaps irreversible. None of these perspectives are wholly new—some echo Marsh’s *Man and Nature*. But only since the 1950s have they come to dominate both scientific and public fears and to pervade environmental debate.

Today’s environmental concerns seem paramount. Yet Marsh and his disciples thought they faced no less dire problems. Consider his portent in *Man and Nature*:

[In] parts of Asia Minor, of Northern Africa, of Greece, and even of Alpine Europe . . . the operation of causes set in action by man has brought the face of the earth to a desolation almost as complete as that of the moon . . . . The earth is fast becoming an unfit home for its noblest inhabitant, and another era of equal human crime and human improvidence . . . would reduce it to such a condition of impoverished productiveness, of shattered surface, of climatic excess, as to threaten the depravation, barbarism, and perhaps even extinction of the species.<sup>[37]</sup>

That tirade was penned 135 years ago. What environmental impacts then menaced? Deforestation, overgrazing, erosion, flooding, and desiccation. These still haunt us; but they are not now our prime concerns. New environmental threats recurrently overshadow old ones. In the 1960s they were pollution and chemical poisons and the Bomb. Today they are acid rain, stratospheric ozone depletion, global warming, nuclear waste, genetic meddling. Except for the last, none of the key issues raised at Rio in 1992 had seemed worth stressing at Stockholm just two decades before.<sup>[38]</sup>

Today’s perils are neither more apocalyptic nor more imminent; past like present Jeremiahs enjoined instant reform against impending doom. What is new are menaces that cannot be seen, threats invisible to everyday view. The effects of soil erosion, even of DDT, were patent to any observant eye. But today’s risks are clear only to arcane experts themselves at odds: the 1995 Madrid working group on climatic change barely agreed to call human influence on global climate “discernable” instead of “appreciable”, “notable”, “measurable”, or “detectable”.<sup>[39]</sup>

Those afflicted by toxins that cannot be tasted, touched, smelled, or seen, like the victims of Bhopal or Three Mile Island, feel petrified by deadly poisons that “slink in without warning and then begin their deadly work from within”.<sup>[40]</sup> Deprived of confidence in a fruitful and manageable environment, people lose faith in the good will as well as the good sense of officials and experts no less baffled and impotent.

Lengthening time-lapses between cause and effect make it ever harder to assign liability, provide compensation, or take precautions. In Ulrich Beck’s telling illustration, “the injured of Chernobyl, years after the catastrophe, are not even all born yet”.<sup>[41]</sup> At Yucca Mountain, Nevada, nuclear waste is to be buried in containers leak-proof for ten thousand years. But even assuming a civil stability without precedence, this would be far too brief: radioactive carbon-14 remains lethal in air or groundwater for up to a million years.<sup>[42]</sup>

Science is feared and resented both as remote and authoritarian and because its



unintended consequences seem ever more ominous. Once radiant innovations now cast the darkest shadows. Nuclear power was but yesterday a glittering technological panacea. Today, economic, health, and safety fears all but throttle the nuclear industry in many lands.<sup>[43]</sup> Popular confidence that science can or government will mount effective controls erodes year by year for other reasons as well. Scientific enterprise is seen to be ever more costly, and the public now largely discounts its miracles in advance. The social effects of this double disillusionment—that technological progress brings happiness; that saving miracles will continue to unfold—are as depressing as the physical anxieties they foreshadow. The failure of inflated expectations and of utopian reform and the loss of faith in progress induce despondency, impotence, and *après nous le déluge* escapism.<sup>[44]</sup>

Environmental transformations are more and more seen to involve the whole inter-related biosphere. The most worrisome impacts—loss of biotic diversity, carbon dioxide build-up, ozone layer depletion—are worldwide problems that override local interests, even national institutions. Whether for acid rain or for wildlife protection, international collaboration is essential, and sociopolitical matters are no less critical than ecological ones. World leaders' transcendent problem is that while the globe is clearly a single ecosystem, it is far from becoming a single community.<sup>[45]</sup>

Growing recognition that everything connects in an indivisible causal web rouses awareness that the effects of human impact are interactive as well as global. Finding radioactive iodine from Hiroshima and Nagasaki in lichens in Lapland and Alaska proves the world one in peril, no-one secure against devastating interdependencies. The interconnectedness of nature is a central tenet not only of radical environmentalism but also of mainstream science. A generation ago even biologists seldom drew such causal connections. Today it is routine to link population pressure with rain-forest depletion, acid rain with heavy run-off, excess CO<sub>2</sub> with climatic change. These linkages are fostered by environmental scientists ever more aware that their mutual concerns demand the interdisciplinary pooling of knowledge.

One of the gravest of impact uncertainties is a dawning awareness that the consequences of new technology always outrun our ability to monitor them. Since we are constitutionally “incapable of weighing their immediate, still more their ultimate consequences”, as Marsh recognized, we are bound to affect nature in ways that we cannot ascertain or assess. Some impacts seem minuscule. But it is wrong to assume “a force to be insignificant because its measure is unknown, or even because no physical effect can now be traced to it”.<sup>[46]</sup>

During the subsequent century of managerial hubris, most conservationists forgot Marsh's maxim. But radiation and toxicity issues of the 1950s and 1960s revived doubts about scientific omniscience; growing pressures on the biosphere now presaged incalculable damage, if only because many impacts operate too slowly to be apparent within a human life span. Environmental impact data typically came too little or too late for appropriate response; each advance in environmental understanding raised more doubts than it resolved.

The public meanwhile grew more fearful of dangers that mounted with time yet could be detected only when precautions would be too late. Scientists were chastised for failing to predict adverse environmental effects with speed, precision, and certainty. Above all, people found intolerable even remote possibilities of long-term, low-level exposure that might cause cancer or birth defects.<sup>[47]</sup> Most fearsome is that some such impacts may already be irreversible, dooming earth's ecosystems. Current fears of extinguishing human life, perhaps all life, echo Marsh's 1864 warning.

### Marsh belittled as utilitarian

But that warning is all that many now know of Marsh's trailblazing role. Every academic text and activist tract opens with homage to *Man and Nature*, then mentions it no more. Marsh is now saddled with the managerial hubris of the 1955 symposium in his honor. As shown, the bent of *Man's Role* was utilitarian, technocratic, optimistic, manipulative towards nature, and élitist in its mode of reform.<sup>[48]</sup> Not much has gone wrong, so don't worry; leave it to us experts, we'll fix it. This mind-set is anathema to today's reformers, who find Marsh as its assigned guru more an embarrassment than a role model for their cause.

That cause is aesthetic, holistic, wilderness-bent. It consigns the resource-use views of Marsh and his pragmatic followers to a limbo of materialist complacency. Marsh becomes "the founder of the interventionist, managerial school of conservation, which takes our disruptive presence in the natural world for granted", as opposed to the hands-off-nature ethos of Thoreau and Muir.<sup>[49]</sup> The latter ethos is *de rigueur* as popular ecology. Indeed, since the mid-1950s references both to Thoreau and to Muir have outnumbered those to Marsh even in the Science Citation Index. The "aesthetic dimension" of Marsh's environmental stance is admitted only to be dismissed as "pompous and sentimental". Thoreau is preferred to Marsh both as a stylist and because "Thoreau's vision of . . . reciprocal interchange" accords better with modern environmentalism than "Marsh's more managerial . . . techno-fix".<sup>[50]</sup>

This polarity is, however, a latter-day illusion. No nineteenth-century figure on either supposed side would have accepted it. The same Thoreau who found "in Wildness . . . the preservation of the World" abhorred actual wilderness, feeling nature devoid of man repellent and fearsome.<sup>[51]</sup> Nor was he the rigorous devotee of primitive simplicity he is often painted; when not exclaiming that "man's improvements . . . simply deform the landscape", Thoreau lauded not virgin but quasi-vacated landscapes, post-improvement scenes of "some retired meadow [where] the rising ground gleamed like the boundary of Elysium, and the sun on our backs seemed like a gentle herdsman driving us home at evening".<sup>[52]</sup> It is always risky to box past tastes into present credos.

Thoreau died in 1862, too soon to react to Marsh's magnum opus. But Muir keenly admired Marsh, drawing extensively on *Man and Nature* to safeguard Sierra soils and forests as watershed protection for Yosemite. Though Muir like other romantics denied that the earth was made for man, it was for men's spiritual salvation that they sought to save wild nature, and they happily embraced Marsh's "economical" arguments to justify their "poetical" ones.<sup>[53]</sup>

Today's poetical activists seem wilfully blind to these links. Stressing Marsh's utilitarianism, Lawrence Buell asserts that Marsh was not "more than idly interested in Thoreau, if that".<sup>[54]</sup> In fact, Marsh esteemed Thoreau as "an observer of organic nature, in the old religious sense", judging that "few men have personally noticed so many facts in natural history accessible to unscientific observation".<sup>[55]</sup>

Marsh's delight in nature was as ardent as Thoreau's or Muir's. "Forest-born", he reminisced, "the bubbling brook, the trees, the flowers, the wild animals were to me persons, not things". As a boy he had "sympathized with those beings, as I have never done since with the general society of men, too many of whom would find it hard to make out as good a claim to personality as a respectable oak".<sup>[56]</sup> To cast Marsh's attachment to nature as one of mere utility travesties the truth.

So is the delusion that Marsh took no interest in nature preservation.<sup>[57]</sup> In fact Marsh was an early and active advocate of setting aside part of the Adirondack wilderness as parkland, for both 'poetical' and 'economical' reasons:

Some large and easily accessible region of American soil should remain, as far as possible, in its primitive condition, at once a museum for the instruction of the student, a garden for the recreation of the lover of nature, and an asylum where indigenous tree, and humble plant that loves the shade, and fish and fowl and four-footed beast, may dwell and perpetuate their kind.

He later noted “with profound regret . . . the ever more rapidly encroaching inroads from the woodsman’s axe” and the impending “total destruction” of Adirondack forests.<sup>[58]</sup>

Disjoining the impetus they approve from concepts they deplore, today’s environmentalists impose their own apartheid on the past. This disserves both history and their cause. Earlier views were more complex, less consistent, and above all less dichotomous than is now supposed. The ideas and values of a multivalent romanticism, variously expressed by Marsh, Thoreau, and Frederick Law Olmsted, fuelled the politics of American parks’ preservation.<sup>[59]</sup>

### **Marsh belittled as élitist**

Marsh thus repels some for being an economist instead of a poet, some for claiming humans superior to other species, some for backing the Biblical injunction to subdue the earth. Still others are dismayed by his view that stewardship not merely restores but improves nature—that the artificial forest can outstrip the natural, the exotic crop surpass the native. All mistrust Marsh’s faith in human agency, for them misguided by moral fiat.

Marsh’s role is scanted by some environmental historians, too. It has become fashionable to dismiss Marsh in favor not only of anarchic romantics like Thoreau and Muir but of unsung folk on the mainstream’s margins. Far from being “forgotten”, as Marsh admirers from the 1930s through 1950s lamented,<sup>[60]</sup> revisionists now contend that Marsh is given far too much credit by establishment scholars. Just as conservation began as an élite enterprise run by and for the wealthy and the well-educated, so the insights that inspired it were attributed—wrongly, such critics claim—to establishment figures like Marsh. In reality, counter populist critics, environmental reform derived from folk views of nature and community long held by common farmers and herders and, indeed, by colonized peoples all over the globe. In this view, Marsh simply echoed conservation insights and observations already widely disseminated.

Here Marsh emerges as a spokesman of WASP America who saw eye to eye with the scholarly and political élites of his time, notably the Washington power structure and the Boston Brahmins, and their aristocratic European counterparts.<sup>[61]</sup> *Man and Nature* served to justify draconian restrictions on resource use by managerial élites, further disempowering ordinary farmers and fishermen, peasants and pastoralists, themselves innately conservation-minded. In this view, an instinctive sense of community and of oneness with nature had fostered, among a myriad common people, views and habits of environmental care that Marsh merely collated for often coercive and autocratic ends.

Ordinary rural folk of northern New England, in Richard Judd’s estimate, anticipated and nourished Marshian insights. Persisting faith in a balance between nature and culture, traditions of resource sharing, and pride in place spearheaded local and state reform in forests and fisheries and village planning, fostering livable and equitable landscapes. Abundant commentary in the local press show Marsh’s admonitions at Rutland in 1847 and later in *Man and Nature* to be derivative, not original. The true roots of environmental reform were neither academic nor scientific nor urban; they

stemmed from rural residents who balanced views of nature as commodity and as home with enduring visions of a democratic commons.

This analysis has some merit; Marsh himself credited many insights to observant neighbors. But the early popular concerns cited by Judd deal primarily with fears of timber and fuel shortage; no evidence of ecological awareness pre-dates Marsh's own writings; much of what later appears in local sources was explicitly inspired by Marsh.<sup>[62]</sup>

Conservation wisdom begins, in another provocative Marsh put-down, not in Europe or North America but on their colonial margins. Two generations before *Man and Nature*, claims Richard Grove in *Green Imperialism*, far-sighted administrators on remote islands—St Helena, Mauritius, St Vincent—learned resource management from personal observation and from non-Western folk insights. Here and subsequently in India and South Africa, French, German, and British foresters meshed European science with traditional modes of husbandry. It was their prescient concern for protecting soils, water supplies, and local flora and fauna from unwanted impact that inspired later mainstream forest conservation.

“Modern environmentalism emerged as a direct response to the destructive social and ecological conditions of colonial rule”, concludes Grove. “Far more influential” than the work of Marsh and other Western scholars was “the experience of perceiving and countering deforestation and land degradation at first hand”. In this view, foresters like Hugh Cleghorn, John Croumbie Brown, and Dietrich Brandis were more Marsh's teachers than his pupils; *Man and Nature* served only to enhance their confidence in what they already knew about degradation.<sup>[63]</sup> Alas, runs Grove's revisionist chronicle, a metropolitan bias that saw conservation as a reaction to industrialization neglected these true pioneers, wrongly according primacy to Marsh, Thoreau, and Theodore Roosevelt.

No doubt Europeans aghast at rapid resource depletion in small islands and in subtropical India and South Africa saw much that was new to them, just as did Marsh in Mediterranean and Alpine lands. Beyond fears for the fate of local flora and fauna, however, there is little evidence of ecological insight, none at all of Hindu, Zoroastrian, or Oriental ecological holism. Grove's island sources refer only to desiccationist rain-making theories, to protecting forests for timber and fuel, and to soil exhaustion, all long presaged in Europe. Save by one or two early Indian foresters, indebted like Marsh to Alexander von Humboldt and Jean Baptiste Boussingault, the importance of tree cover in retaining moisture and preventing excessive runoff—the crux of Marsh's cognition—is nowhere else mentioned.<sup>[64]</sup> To this reader of Marsh's correspondence with Cleghorn, Brandis, Brown, and Henry Yule, Grove's contention that Marsh's insights “were of surprisingly little import” in India and South Africa seems bizarre.<sup>[65]</sup>

“The roots of environmental ideas”, writes imperial historian John MacKenzie on the basis of Grove's work, lie “much further back in history than has ever occurred to the American practitioners, blinkered as they are by the nationalist obsession with George Perkins Marsh, John Muir, and Henry David Thoreau”.<sup>[66]</sup> Indeed, some of these ideas trace back to Theophrastus in the third century BC, as Marsh was one of the first to point out. But to claim that Americans failed to appreciate Old World environmental ideas is to ignore New World devotion to European mentors, from Buffon and Humboldt to Guyot and Agassiz, not to mention American foresters' slavish admiration of German silviculture.<sup>[67]</sup> And to attribute the origins of conservation wisdom to oceanic islands and Oriental mysticism requires a massive misreading of evidence.

Another revisionist suggests that nineteenth-century environmental reforms, such as those lauded by Marsh, may have done more harm than good. In the Alps and Pyrenees,

Tamara Whited blames the misguided policies of technocratic foresters for much that went wrong. The French Forestry Service's draconian edicts of the 1860s evicted local peasants from forest pastures, with the aim of securing tree cover that would safeguard lowland settlements against devastating upland erosion. Pasturing, taking wood, clearing land for farming now became crimes. Inherited post-Revolutionary fears served to justify foresters' interventions in alpine hydrology. The dogma, stemming especially from studies by Alexandre Surell, much cited by Marsh, was that peasant deforestation aggravated flooding and landslides; mandatory reforestation was needed. Only forests could stabilize these volatile slopes, and foresters saw potential forests in every mountain pasture. But the foresters were wrong, Whited shows, on the absorptive limits of forested soils; wrong in seeking to reforest high and steep slopes; wrong in anathematizing grassland, for grass consolidated many alpine soils better than trees. And on highly erosive slopes, stream-channel engineering was often a better solution than reforestation.<sup>[68]</sup>

With much of this critique Marsh too saw eye to eye. His initial delight in French forestry reforms was soon damped by their failures; he kept on revising his own views of the proper mix of reforestation, limited pasturing, engineering works, and simply leaving nature alone. But Marsh had no general faith in folk wisdom. And he viewed folk ignorance and shortsightedness, coupled with landlessness and lack of resources, as a major stumbling block to environmental reform. But his intimate knowledge of alpine life made him fully aware of the social injustice often done in the name of land reform under state aegis.

### **From the conquest of nature to the deification of nature**

Thus some see Marsh's environmental insights as largely erroneous, others as unoriginal or inconsequential. Still others charge that the reform programs he fuelled were technocratic, élitist, socially regressive, imperialist, or anthropocentric. Such criticisms seem to me unfounded or beside the point. Marsh's work might with more reason be held passé, obsolete, irrelevant to modern times, modern viewpoints, modern environmental threats. To be sure, the issues Marsh tackled—deforestation, soil erosion, desertification—are still with us. Marsh's insights into their causes and consequences are conceded widely correct, his remedies largely germane. But these are not the environmental issues now uppermost in many minds. Fears of impact today focus on global warming, depletion of the ozone layer, nuclear contaminants, transgenic crops. No-one in Marsh's day was aware of any of these. Indeed, only the first even existed.

We share Marsh's concern about human environmental impacts and salute his pioneering efforts to comprehend and contain their malign effects. But how we define and tackle these issues is utterly different. The problems we face, our confidence in resolving them, our views of progress, nature, ecology, human transcendence, culture, and history have all undergone striking change since Marsh's day, even since I first reviewed Marsh's work 50 years ago. It is not only the threats that are new, but our notions of what and who to blame, how to curtail the risks and reduce the damage, and whether we are apt to succeed. In brief:

- Marsh dealt with impacts that were for the most part visible, evident, and manifest within the span of a lifetime; the impacts now most feared are largely invisible, their effects long inconspicuous, often long-delayed.
- Marsh proposed reforms whose economic cost was thought trifling, certainly less



- than the benefits to be accrued from stability, thrift, and sustained yield; the costs of many reforms deemed vital today seem almost too staggering to implement.
- Marsh judged progress toward a fruitful and balanced earth not assured but probable, given foresight, collective will, technological advance, and expert guidance; faith in progress today has dwindled so far that many suspect technology does more harm than good, and doubt that private enterprise is willing or public leadership able to mount the reforms needed for a livable globe.
  - Marsh presumed a manipulated and managed earth superior to any primitive state of nature and considered most human impacts improvements; many modern environmentalists view untouched nature as sacrosanct, and most suppose the less human impact of any kind the better.

### **Insights from Marsh for environmental morality**

Given such hugely unlike perspectives, how can Marsh's insights be useful today? I suggest they may help us bridge the gulf between the environment we have and the environment we need. But I start with a caveat. The past is a foreign country, not our own. We cannot simply borrow another era's lessons, however salutary. Marsh's views stem from a world whose memories and mind-sets, habits and hopes were remote from ours. They made sense in terms of their environment, not of ours.

But even though we cannot directly profit from the wisdom of another time, we can benefit by seeing how and why other perspectives then seemed sensible. In becoming aware of perspectives unlike our own, we open the door to manifold alternative ways a diverse humanity has used ever-changing yet memorably recognizable habitats. It is worth pondering certain Marsh perspectives that run counter to conventional wisdom today.

#### *The inevitability of impact*

We now see, far more than Marsh ever did, how malign, even catastrophic, our environmental impingement can be. Shrinking in revulsion from horrific scenarios, many idealize nature devoid of human impress, yearn for a world unimpacted by our species. It is an idle dream. Aspects of our impact may be altered or moderated, but impact we are bound to have, its effects ever more extensive.

To Marsh the notion of relinquishing dominion over nature was no dream but a nightmare—regression to a savage and heedless state. But short of utter environmental disaster, it could not happen. He showed how every human act affects nature and how technology expands collective impacts, augmenting erosive and other processes. He advocated mitigating and repairing such damage, not by ceasing to reshape nature but by doing it better. Ever-growing human might meant not relaxing but strengthening global manipulation. We are stuck with a managed world; it is up to us to manage it better.

#### *The primacy of the unexpected*

Yet even the best intentions do not ensure good environmental management. For as Marsh reiterated time and again, most human impacts are unintentional. "Vast as is the . . . magnitude and importance [of] intentional changes", they are "insignificant in comparison with the contingent and unsought results which have flowed from them".<sup>[69]</sup>



As human global impacts proliferate, their unsought, undesirable, perhaps lethal consequences can never be fully foreseen, let alone prevented.

This insight has greater resonance in our time than in Marsh's own, William Meyer suggests. For impacts back then were more immediate and evident than now, when "the secondary, distant, and surprising effects of which Marsh spoke have become commonplace".<sup>[70]</sup> We are today much more alert than were Marsh's contemporaries to environmental evils that are invisible and unexpected. But we have not schooled ourselves to accept the humbling awareness of ultimate ecological uncertainty that pervades the pages and informs the insights of *Man and Nature*.

### *The uniqueness of human intention*

The distinction Marsh posited between man and 'brute' creation is abhorrent to most environmentalists today. Viewing the whole of organic life as a morally seamless unity, they enjoin respect for all creatures from pandas to paramecia, for nature in toto, for a hypothesized Gaia. Such respect has many virtues, spiritual, aesthetic, conservationist, perhaps even practical. But whatever its virtues, it is a value held in some cultures, not a universal truth. Such a view was morally alien to Marsh's time. As he and his contemporaries saw it, our species alone had conscious will, a sense of morality, a set of purposes; will, morality, and purpose varied with culture but did not exist outside culture.

At the risk of being charged with anachronism, let me rephrase Marsh's point in today's context. No evidence yet suggests that nature, or any part of it, is an intentional moral being. Environmental reformers who find this unbearable impute their own ideas and aims to nature and then purport to speak on nature's behalf. This is futile and dangerous. It shelters in hidden higher wisdom arrogated to self-appointed spokesmen. Taking responsibility for our own actions and ambitions is more honest, and in the end more efficacious, than reifying and finding refuge in voiceless nature.

### *The primacy of stewardship*

To deny a voice to nature is not, however, to say that we may do with nature just as we please. If we are not accountable to nature itself, as collective members of corporate communities we are responsible for the world our descendants will inherit. Human culture requires communities, social organisms that transcend single life spans and attach us to the heritage of our forebears and to the legacy we leave our descendants. Communities are compacts among the dead, the living, and the still unborn. Faith in the extension of community into a past and future beyond our individual selves is a necessary religion, as Durkheim put it; without it life would be shorn of meaning.<sup>[71]</sup> Only an awareness of what we owe to those who came before us and a care for those who will come after enables us to plan at all, let alone with effective will.

Active stewardship was for Marsh crucial to environmental health. But it required restricting private property rights more stringently than most then realized or even now tolerate. Unless "the sacred right of every man to do what he will with his own" were rescinded, Marsh saw disaster certain. "Man has too long forgotten that the earth was given to him for usufruct alone, not for consumption, still less for profligate waste".<sup>[72]</sup>

The milieus we inherit from a myriad of forebears include all their transformations, unwitting and otherwise. As temporary denizens we make the best of that environment according to our own lights. As stewards we pass it on to future generations, trusting that our heirs will also wish to become stewards. Yet for all its obvious benefits,

stewardship is not natural but social; in most societies it has to be induced and protected. In modern post-industrial society stewardship contends against many countervailing pressures. Urgent immediate needs, increasing mobility, responses to urgent crises, faceless corporate unaccountability, the fraying of community ties, the democratic process itself impose a tyranny of the present that throttles stewardship. Already aware of many of these pressures, Marsh sought to inculcate care for the future by education, training, involvement in public affairs, and not least, active concern for present environments beyond their mere pecuniary value.

To be valuable enough to care for, the environment must feel truly our own, not merely a commodity but integral to our lives. Like our forebears and our heirs, we make it our own by adding to it our own stamp, now creative, now corrosive. The environment is never merely conserved or protected; in Marsh's term, it is modified—both enhanced and degraded—by each new generation. We should form the habit of lauding, not lamenting, our own creative contributions to the environment. Learning to praise, we become more apt to make changes that we and our successors feel worthy of praise.

### *The primacy of the amateur*

Overcoming narrow specialization was another Marsh precept of environmental import in our own even more highly specialized time. In no realm is the tyranny of the expert so socially obnoxious as in environmental management. More than the boundaries between academic disciplines, Marsh sought to breach the walls dividing academe from active life. To inculcate environmental stewardship demands engagement in the hurly-burly of everyday life. In the popularizing of science Marsh saw signs, 130 years ago, that “the world of mind, like the world of politics, is becoming a democratic republic”.<sup>[73]</sup>

Marsh's notion of the democracy of science seems a pipe dream in these days of forces scarcely perceptible even to experts. Yet it is essential that we strive to become familiar with all the processes that make and shape us. Only so armed can we play an intelligent role in accepting or rejecting, using, controlling, and disposing of their waste products and side effects. Realizing that experts are as irrational, defensive, and culture-bound as all the rest of us may help the public gain confidence in its ability to assess even the arcane and the specialized.<sup>[74]</sup>

The rise of specialization was, in Marsh's view, a sad but perhaps reparable consequence of social and scientific progress. That “the days are gone forever when one human intellect could compass all recorded human knowledge” Marsh well knew; already “the memory of the comprehensively learned man [was] less a repository of knowledge than an index to its archives”. He was not happy about this. Seeing “we must all turn specialists soon”, Marsh could not help “envying scholars of the time when Crichtons were possible” (a reference to “the Admirable” sixteenth-century Scottish prodigy of learning).<sup>[75]</sup> For Marsh the last true Crichton was Humboldt, whose “learning . . . embraced the whole past history and present phase of every branch of physical research . . . graced with the elegances of all literature and dignified with the comprehensive wisdom of all philosophy”; Humboldt's insights derived from “the mutual interdependence of apparently unrelated knowledges”.<sup>[76]</sup>

Marsh judged Humboldt's, Carl Ritter's, and Élisée Reclus's ‘new geography’—less a science than a bond among sciences—best fitted to popularize all these knowledges.

No other [realm] has so many visible points of contact with the material interests of human life, no other deals with subjects whose practical importance is so constantly forced upon our notice, no other so essentially consists in the investigation of the

relations of action and re-action between man and the medium he inhabits. [Not dependent on] accuracy of measurement or minute quantities, [free from] forbidding nomenclature, [geography] appeals to the widest circle of thinking men, its special phenomena are facts of hourly and universal observation, its intimate connection with the well-being and social progress of all the tribes of man . . . entitles it to a high place among . . . the Moral Sciences.<sup>[77]</sup>

Marsh continued to think that, specialists apart, “it is better to taste a variety of scientific and literary viands than to confine ourselves to a single dish of stronger meat”. Better both for individuals and for the body politic. Just as someone “who has mastered the ordinary use of a wide vocabulary [was often] a better speaker and even writer than the profoundest theoretical grammarian”, so did diffusion of a wide range of knowledge and culture make better citizens.<sup>[78]</sup>

For all Marsh’s dire warnings, pragmatic optimism suffuses *Man and Nature*. Many of his insights and remedies were drawn from Europe, but his central themes—the need for reform, the faith in man’s powers—are characteristically American. And they were interfused with another American trait—commitment to the future. The whole force of *Man and Nature* lies in its assumption that the welfare of future generations transcended immediate gains. Americans who disdained to practice a better husbandry for themselves should feel morally obliged to do so for their offspring.

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## Notes

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- [45] World Commission on Environment and Development, *Our Common Future* (Oxford 1987) 342; K. Boulding, Commons and community: the idea of a public, in G. Hardin and J. Baden (Eds), *Managing the Commons* (San Francisco 1977) 280–94 at 289.
- [46] *Man and Nature*, 465. Two decades later Marsh noted that “cosmic forces of little comparative energy may, by long continued or often repeated action, produce sensible effects of great magnitude”; hence ordnance recoil and impingement might “accelerate or retard the rotation of the earth, or even . . . deviate the earth itself from her orbit”. See Marsh, *Earth as Modified by Human Action* (1884 edition) 616–17.
- [47] Hays, *Beauty, Health, and Permanence*, 172–4; E. Efron, *The Apocalyptic: Politics, Science, and the Big Cancer Lie* (New York 1984).
- [48] Fox, *op. cit.*, 105.
- [49] David Ehrenfeld, *Beginning Again: People and Nature in the New Millennium* (New York 1993) 177–9. On pigeonholing Marsh as a utilitarian, see L. Anderson, Nothing small in nature, *Wilderness* (Summer 1990) 64–8.
- [50] From 1955 to 1987 the *Science Citation Index* had 413 references to Thoreau, 248 to Muir, and 68 to Marsh. I have updated R. MacDowell, Thoreau in the current scientific literature, *Thoreau Society Bulletin* 143 (1982) 2, and 172 (1985) 3–4. See also C. Tichi, *New World, New Earth: Environmental Reform in American Literature from the Puritans through Whitman* (New Haven 1979) 220; L. Buell, *The Environmental Imagination: Thoreau, Nature Writing, and the Formation of American Culture* (Cambridge, MA 1995), 306–7.
- [51] H. D. Thoreau, Walking, in idem, *Walden and Other Writings* (New York 1937 [1862]) 593–632 at 613; J. G. Blair and A. Trowbridge, Thoreau on Katahdin, *American Quarterly* 12 (1960) 508–17.



- [52] Thoreau, *Walking*, 602, 631–2.
- [53] R. F. Nash, *op. cit.*, 131, 105; F. Turner, *John Muir: From Scotland to the Sierra* (New York 1985) 97, 308, 310, 383–4.
- [54] Buell, *op. cit.*, 477, note 53.
- [55] Marsh, *Man and Nature*, 267 note 235; (1867 printing) 552 note 5, 554 note 12, 558–9 note 35, 565 note 60, 566 note 65; *Earth as Modified* (1874 edition) 340–1; (1877 printing) xxiii.
- [56] Marsh to Charles Eliot Norton, 24 May 1871, Norton Papers, Harvard University Library; Marsh to Joseph Neilson, June–July 1882, in Neilson, *Memories of Rufus Choate* (Boston 1884) 376–7.
- [57] Meyer, *op. cit.* 6. Meyer overstates my own contrast of Thoreauvian wildness and Marshian domestication in my 1958 biography (272).
- [58] *Man and Nature*, 203–4; *Earth as Modified* (1884 edition) 329. See J. R. Ross, Origins of the conservation movement, *American Studies* 16 (1975) 49–62; K. Jacoby, Class and environmental history: lesson from “the war in the Adirondacks”, *Environmental History* 2 (1997) 324–42.
- [59] Lewis Mumford, Prospect, in Thomas, *Man's Role*, 1141–52 at 1150.
- [60] Carl Sauer called Marsh a “forgotten scientist” in Theme of plant and animal destruction in economic history [1938], in idem, *Land and Life*, 145–54 at 147–8. Lewis Mumford termed *Man and Nature* “quite forgotten even by geographers until I resurrected it in *The Brown Decades*” [1931]. (Mumford to Babette Deutsch, 30 October 1960), in L. Mumford, *My Works and Days* (New York 1979) 177.
- [61] Fox, *op. cit.*, 109. Today’s environmental-justice crusaders cast yesterday’s crusades as élitist in origin, leadership, and interests, as plots against the poor, and as Western ploys to keep the Third World underdeveloped. See R. Guha and J. Martinez-Alier, *Varieties of Environmentalism: Essays North and South* (London 1997) xvii–xviii, 3–21, 31–45.
- [62] R. W. Judd, *Common Lands, Common People: The Origins of Conservation in Northern New England* (Cambridge, MA 1997) 2–3, 8, 49–56, 73–7, 84–9, 90–7, 147, 265–6. In the documents sent to me by Judd (13 November 1997), the sole ‘ecological’ reference is an 1851 Massachusetts essay lauding hillside forests “for binding [soil] to the earth, preserving it from wearing and washing away under heavy rains and snows”. See E. H. Bennett, Ornamental and forest trees, *Transactions of the Agricultural Society of the Commonwealth of Massachusetts* (1851) 380.
- [63] R. H. Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1699–1860* (Cambridge 1995) 486, 475, 470–1.
- [64] D. Butter, *Topography of Oudh* (1839) and E. G. Balfour, Notes on the influence exercised by trees in inducing rain and preserving moisture (1849), in Grove, *op. cit.*, 430–1, 445. Pierre Poivre in Mauritius said only that cleared lands would be burnt and desiccated by the sun. *Ibid.*, 185–8.
- [65] Grove later admits Marsh’s influence vis-à-vis Brown. See R. Grove, Scotland in South Africa: John Croumbie Brown and the roots of settler environmentalism, in Griffiths and Robin, *op. cit.*, 139–53 at 147. Marsh encouraged Brown to publish his *Hydrology in South Africa* (1975). See W. Beinart and P. Coates, *Environment and History: The Taming of Nature in the USA and South Africa* (London 1995) 44–5. Brown’s *Forests and Moisture* (1877) is laden with extracts from *Man and Nature*.
- [66] J. M. MacKenzie, Empire and the ecological apocalypse: the historiography of the imperial environment, in Griffiths and Robin, *op. cit.*, 215–28 at 221.
- [67] N. Langston, *Forest Dreams, Forest Nightmares: The Paradox of Old Growth in the Inland West* (Seattle 1995) 104–9.
- [68] T. Whited, *The Struggle for the Forest in the French Alps and Pyrenees, 1860–1940* (Ann Arbor 1994) 88, 102–4, 112–17. No mention of Marsh has been found, however, among French forestry sources (Whited to the author, 10 June 1996; Jean-Pierre Feuvrier to the author, 16 September 1996).
- [69] Marsh, *Man and Nature*, 36.
- [70] Meyer, *op. cit.*, 5–6.
- [71] Emile Durkheim, *The Elementary Forms of Religious Life* (New York 1995 [1912]) 213–14, 351–2, 372, 379.
- [72] *Man and Nature*, 201–2, 36.
- [73] Marsh, Physical science in Italy, *The Nation* 7 (1868) 420.
- [74] B. Wynne, May the sheep safely graze? A reflexive view of the expert-lay knowledge divide,



in Lashet *al.*, *op. cit.*, 44–83; R. Lidskog, Scientific evidence or lay people's experience? On risk and trust with regard to modern environmental threats, in M. J. Cohen (Ed.), *Risk in the Modern Age* (London 2000).

- [75] G. P. Marsh to H. C. Lea, 19 November 1876, University of Pennsylvania Library, Special Collections. See Marsh, Crichton (James), *Johnson's New Universal Cyclopaedia* (New York 1878) 4: 1584.
- [76] Marsh, Study of nature, 44.
- [77] Marsh, Preliminary Notice [to Reclus's *La Terre*].
- [78] Marsh, Physical science in Italy, 420–1.

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## Environmental history, philosophy and difference

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Human geography seems to have 'gone back to nature', or at least returned to that central question of human environmental relations, now heavily armed with a critical sense of the social origins of ideas of nature, its materiality and the politics of environmental change. As cultural geography's double attention to the symbolic and material forms of land, environment, landscape or nature gets recast in Latourian moulds, and Marxist explorations of social justice get environmental, nature returns to historical geography via environmental history.<sup>[1]</sup> David Lowenthal's rich and thoughtful reading of George Perkins Marsh and his reception opens up historical, philosophical, epistemological and ultimately political questions which touch upon these developments but also point in the direction of fruitful new cross-disciplinary approaches. Lowenthal traces and compares views of 'man and nature' across the hundred years since Marsh's writing. But other opportunities for comparison and synthesis are provoked by the gendered language of Marsh's central question of "whether man is of nature or above her". The philosophical and historical questions of difference, unity and domination in human–environmental relations have been central to geography and environmental history. Yet they have also been key areas of analysis and critique within feminism and feminist geography where the cultural meanings of the human, nature and the natural have been so thoroughly interrogated. Despite this, the historical focus of environmental history and the insights of feminist environmental philosophies have remained largely disconnected to the detriment of both. The problems of the isolation of these two areas of theory and research go far beyond the absence, with some exceptions, of questions of gender within environmental history, or the persistent gendering of nature. Feminist and postcolonial approaches to questions of gender, culture, nature and the environment clearly suggest ways in which environmental history could become more sensitive to social difference. But importantly also, environmental history can enrich the study of the material and symbolic relationships between gender and the environment. Most simply this means using environmental history to disaggregate the terms 'nature' or environment, and using the politics of social difference to disaggregate the notion of the 'human' in environmental history.

Arising as it has from a concern with the adverse environmental effects of modern