GEORGE PERKINS MARSH AND THE TRANSFORMATION OF EARTH

An Introduction to Marsh's *Man and Nature*

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George Perkins Marsh (1801-1882) stated that his book, *Man and Nature*, was "a little volume showing that whereas [Carl] Ritter and [Arnold] Guyot think that the earth made man, man in fact made the earth" (as cited in Lowenthal, 2000, p. 267). With this position, Marsh inverted a dominant theoretical position in the new geography of the 1800s. Humans became active agents in the transformation—both destruction and revitalization—of nature. Despite Marsh's Calvinist background, he sought to remove teleological tendencies from scientific studies of the material world. In *Man and Nature*, Marsh (1864) provided a detailed discussion of the historical degradation of nature. His work is seen as a warning to a society that insists on an irrational interaction with nature. Marsh demanded that people must work to restore, to whatever extent is possible, past damages to nature, as well as engage in practices that prevent further degradation of nature. Marsh's work, Lewis Mumford (1931/1971) declared, was "the fountainhead of the conservation movement" (p. 35).

Marsh was a polymath fluent in 20 languages, a businessman, and a statesman (who was U.S. minister to Turkey from 1847 to 1853 and to Italy from 1861 until his death in 1882). He spent a lifetime studying the interrelations of people and nature. He first broached the subject of *Man and Nature* at a lecture to an agricultural society in 1847. He continued to accumulate knowledge through his reading and during his travels in Europe and Egypt. Everywhere that Marsh lived, his house served as a meeting place for political, scientific, and artistic discussions. Marsh and friends would engage in in-depth conversations and studies of recent work in philology, history, and geology, including the work of Ritter and Guyot. When Marsh taught a class at Columbia University, Guyot was among the friends whom Marsh spent time with (Lowenthal, 1958, pp. 95, 196). This intellectual interchange served as the basis from which Marsh forged his ideas about the relationship between people and nature. With *Man and Nature*, Marsh created a radical shift in the perception of naturalism and geography. The transformation of nature was not necessarily beneficial to nature, including humanity.

To understand the significance of Marsh's position, it is useful to consider the intellectual background to his ideas. Ritter (1779-1859) was a prominent historical geographer in Europe, "who stressed the idea of the interdependence of all phenomena on the earth's surface" (Freeman, 1963, p. 32). He proposed that the level

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of civilization was inversely related to the degree of dependence on nature (Quaini, 1982, pp. 20-26). Being a geographical determinist, Ritter believed each continent had its own characteristic, a special form, and the people of this land would fulfill to the characteristic of the continent. "Distances, natural influences, natural productions even," Ritter (1881) argued,

> yield always to the victorious march of man, and disappear before his tread; or, in other words, the human race is more and more freed from the forces of nature; man is more and more disenthralled from the dominion of the earth which he inhabits. The history of specific districts and of entire continents confirms this. (pp. 59, 183-184)

Ritter's studies of the material world stressed an evolutionary characteristic, which reflected a long-term process of organic development traceable to mechanical causes. The world was full of planned changes. "The history of the Earth," Ritter (1881) wrote,

> displays, in all the monuments of the past, that it has been subjected in every feature, in every division of itself, to ceaseless transformation, in order to show that, as a whole, it is capable of that organic development on which I lay so much stress. (p. xxi)

Although Ritter (1881) firmly grasped that historical changes had taken place, his approach was ultimately teleological, traceable to a divine hand. The "mutual working and interdependence of things," Ritter commented, "can only be the result of Divine Providence" (p. xvii). Without it, he asserted, "the human race would have become extinct." This was not possible, however, because the earth was "becoming more and more perfect and beautiful." It was

> as a seed sown from the hand of God himself on the great fields of space, and filled with a germinant power of life, which will transform it more and more, and make it more and more worthy of its noblest inhabitant, is the first, as it is the last, idea which we must take and keep in these inquires. (pp. xvii, xxi)

Thus, ecological degradation was not a concern for Ritter. Changes in nature were seen as beneficial and in accordance with the hand of the Divine.

The influence of Ritter's historical geography was vast. Guyot, a friend of Marsh, was a student and disciple of Ritter. He sought to uncover "the harmony between natural science and revealed religion" (Freeman, 1963, p. 40). Guyot's (1849/1855) lectures on this topic were published as *The Earth and Man*. Taking up a geological determinist position, he proposed that science should "endeavour to seize upon the mutual actions of the different portions of physical nature upon each other, or inorganic nature upon organized beings, and upon man in particular" (as cited in Freeman, 1963, pp. 40-41). In Guyot's (1887) book *Creation*, he proposed that science and the Bible complete each other. Science can help people "rightly to understand the comprehensive statements of the Biblical account which refer to God's work during the grand week of creation" (pp. 6-7). Like Ritter, Guyot's position was ultimately mechanistic and teleological, believing that "the Earth is really a wonderful mechanism, all parts of which work together harmoniously to accomplish the purpose assigned to it by an All-wise Creator" (Guyot, 1873/1901, p. 2).

Perhaps more notable is Ritter's influence on Hegel (1975), whose *Philosophy of History* drew directly on Ritter's work. Hegel believed that by studying the vari-

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ous geographical modes of living, by different populations in various regions of the earth, an understanding of world history was possible (Quaini, 1982, pp. 19-24). To Hegel, history and nature were inseparable, while remaining in a dialectical relationship. Hegel explicitly used Ritter's characterization of the physical structure of continents and the possibilities for historical human development (Hegel, 1975, pp. 173-176; Quaini, 1982, pp. 20-21). To Hegel, world history was "spirit made manifest," and physical geography allowed for the development of "national spirits" that

> are separated in time and space; and in this respect, the influence of the natural context, the relationship between the spiritual and the natural (i.e. the national temperament, etc.) makes itself felt. Seen against the universality of the ethical whole and its own active individuality, this relationship is a purely external one; but as the ground on which the spirit moves, it is nevertheless an essential and necessary basis. (p. 152)

This relationship to the natural world is further explored in the following statement:

> In so far as man is unfree and natural, he can be described as a creature of the senses. The world of the senses, however, consists of two distinct aspects: that of subjectivity and that of external nature. The latter is the geographical aspect, which can be recognized at first glance as part of external nature in general. What we have to consider, therefore, are differences which are grounded in nature. They must also be seen first and foremost as particular possibilities from which the spirit germinates, and they accordingly lend it its geographical basis. It is not our business to acquaint ourselves with the nation's environment as an external locality, but merely with the natural type to which the latter belongs; for this is intimately connected with the type and character of whatever nation is rooted in this particular soil. The nation's character consists simply in the form and manner in which it appears in world history and takes up its position and stance within it. (p. 153)

Although noting that humans still retain free will, Hegel used this position to support Ritter's notion that the development of a civilization was in inverse relation to the degree of dependence on nature. Hegel (1975) contended that

> nature is therefore the original basis from which man can achieve inward freedom. For in so far as man is primarily a creature of the senses, it is imperative that, in his sensuous connection with nature, he should be able to attain freedom by means of internal reflection. (p. 154)

Writing in the era of the Industrial Revolution, Marsh recognized the legitimacy, in a sense, of discussions related to the increasing freedom of human society from nature (absent of geographical determinism). But by stating that "man in fact made the world," Marsh argued that humanity was now a potent force in the transformation of the globe, with often devastating consequences. Marsh inverted the historic insights of Ritter (and Guyot and Hegel), to raise the question of human domination of earth.

Marsh was not alone in this argument. Karl Marx, who was a student of Ritter's, attending the latter's lectures at Berlin University in 1838 (and who studied Hegel extensively), also turned Ritter's argument on its head (Quaini, 1982, p. 25). In the *German Ideology*, Marx pointed out how the earth that had existed prior to the rise of humanity was now exceedingly difficult to find:

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> Nature, the nature that preceded human history, is not by any means the nature in which Feuerbach lives, it is nature which today no longer exists anywhere (except perhaps on a few Australian coral islands of recent origin) and which, therefore, does not exit for Feuerbach either. (Marx & Engels, 1976, Vol. 5, p. 40)

Marx recognized that nature could not be reduced to human history, yet nature as we perceive it cannot be easily divorced from human history and from the sensuous activity of human beings as it developed with a given division of labor, involving specific relations to nature. For Marx, the solution to the human-nature relationship was not reducible to choosing between free will or determinism. Instead, Marx proposed a materialist conception of history as a way of overcoming the break between nature and history, allowing for the exploration of the simultaneous relationships of humanity with nature and human beings with human beings (Quaini, 1982, p. 14). Opposed to Hegel's conception, Marx argued that the interchange between nature and society is mediated by the historical dialectic of human labor. He rejected the geographical determinism of Ritter, asserting that the relationship between nature and human beings was historical and dialectical.

Like his great contemporary Marx, Marsh avoided the mechanistic environmental determinism that was present in the new geography. Furthermore, Marsh felt that it was important to avoid the teleology of Ritter and Guyot. Marsh rejected attempts to account for God through studying the physical world, stating, "Spiritual religion must look elsewhere than to the natural world for its evidences" (as cited in Lowenthal, 1958, p. 271).

Marsh's work reveals a historical analysis of the interrelationship between human beings and nature—albeit one that did not directly address the forces within industry and the economy-generating environmental degradation. Marsh understood that every human action left an imprint on nature. For him, this was a given. It was the consequences of this action that must be understood to better regulate future interaction with nature. Marsh pointed out that people were part of nature and depended on the natural world for their survival but often—whether intentionally or unintentionally—destroyed nature in the process of obtaining their livelihoods. He believed that much of the environmental degradation throughout history was caused by people's "ignorant disregard of the laws of nature" (Marsh, 1864, p. 11). Marsh regarded human interaction as unique, given the scale, intent, and long-term effects of their actions. He saw the clearing of forests; the draining of surface waters; the displacement of indigenous plants with domesticated, nutritious, profitable crops; and the construction of roads, cities, harbors, and canals as major factors shaping the material world. Thus, he argued that humans were the active agent in shaping nature and that this subject was larger than the geography of his time (Marsh, 1864, p. 19).

In *Man and Nature*, Marsh (1864) examined the relationships surrounding forests, soil, water, plants, and animals. His discussion regarding the destruction of forests reveals the complexity and sharpness of his analysis. "With the disappearance of the forest, all is changed," Marsh explained,

> at one season, the earth parts with its warmth by radiation to an open sky—receives, at another, an immoderate heat from the unobstructed rays of the sun. Hence the climate becomes excessive, and the soil is alternately parched by the fervors of summer, and seared by the rigors of winter. Bleak winds sweep unresisted over its surface, drift away the snow that sheltered it from the frost, and

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> dry up its scanty moisture. The precipitation becomes as regular as the temperature; the melting snows and vernal rains, no longer absorbed by a loose and bibulous vegetable mould, rush over the frozen surface, and pour down the valleys seaward, instead of filling a retentive bed of absorbent earth, and storing up a supply of moisture to feed perennial springs. The soil is bared of its covering of leaves, broken and loosened by the plough, deprived of the fibrous rootlets which held it together, dried and pulverized by sun and wind, and at last exhausted by new combinations. The face of the earth is no longer a sponge, but a dust heap, and the floods which the waters of the sky pour over it hurry swiftly along its slopes, carrying in suspension vast quantities of earthly particles which increase the abrading power and mechanical force of the current, and, augmented by the sand and gravel of falling banks, fill the beds of the streams, divert them into new channels and obstruct their outlets . . . there is a constant degradation of the uplands. . . . The earth, stripped of its vegetable glebe, grows less and less productive, and, consequently, less able to protect itself by weaving a new network of roots to bind its particles together, a new carpeting of turf to shield it from wind and sun and scouring rain. (pp. 186-187)

If this type of degradation were to continue, the earth (according to Marsh) would be rendered no longer fit for human habitation. Due to the extended relationships between forests, soils, and water systems, Marsh saw the felling of forests as one of the most destructive causes of physical deterioration on earth.

Marsh brought this in-depth analysis to every subject that he studied. A report that he authored on the decline of the fish population in Vermont highlights the interrelationships found in Marsh's work. He attributed the decline to the clearing of the forest, which caused runoff and fluctuations in the flow of water; pollution of waters by industrial and urban developments; overfishing during spawning season; and the destruction of insects, which served as a food source for fish larvae (Lowenthal, 1958, p. 186).

The historical effects, in social and geological terms, of human action, both intended and unintended, remained major issues in Marsh's work. When studying the prospects of irrigation on the plains, Marsh pointed to the negative environmental consequences, such as salinization and the exhaustion of the soil (Lowenthal, 1958, pp. 306-308). He also warned against the private ownership of water rights to prevent inclinations toward greed on the part of corporations and private individuals. Furthermore, Marsh argued for the preservation of the wilderness, contending that "only in the unviolated sanctuaries of nature" could people gain "that special training of the heart and intellect" necessary for the human spirit (as cited in Lowenthal, 2000, p. 419).

Man and Nature remained a work in progress for Marsh. He continued to make changes, updating his data and analysis with new materials and correcting errors in his earlier edition. With ongoing research and observation, Marsh continued to grow in his understanding of the interrelationship between people and nature. Reprinted here is part of Marsh's introduction to *Man and Nature*, in which he outlines the progressive degradation of nature, as well as issuing a call for action to change this destructive course.

Although lacking Marx's critique of capitalism and his understanding of historical conditions, Marsh's analysis of how the human transformation of nature took place, generating global ecological degradation, remained unparalleled. Ultimately, Marsh promoted the need for a rational, sustainable interaction with nature, where humans acted as coworkers with nature, by learning not to violate the laws of nature (Marsh, 1864, p. 35). Marsh's work remains an inspiration to the conserva-

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tion of nature. It provides a foundation for understanding human beings as active agents in the transformation of nature. Marsh did not reify nature for its own sake. He promoted the protection of nature for the future of humanity, believing that humans could and must change their destructive relationship with nature for the better.

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