

# Environmental Determinism

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## DIMENSIONS

While environmental determinism can conveniently be described as the claim that human activities are controlled by the environment, such definitional clarity masks historical complexity. Sometimes the behaviour in question is attributed to the configuration of topographic features like rivers, mountains, valleys, deserts, plains, and so on; sometimes climatic conditions are identified as the critical *explanans*; sometimes the local character of soil is taken to be the critical determining environmental factor. And of course even these causal explanations may be more finely tuned – the role of a tropical sun, or long-term climatic change, or persistent drought may be called upon to explain one aspect or another of human culture.

At the same time, the range of human phenomena – at markedly different scales – over which the environment is purported to exert determining influence is no less diverse. Some have ascribed various medical conditions to environmental causes; others have brought the human psyche and its states within its explanatory arc. Others, not least geographers, have found in the earth's surface topography the determining cause of

patterns of human settlement; still others have connected economic growth and downturn to weather patterns. The development of science has also been attributed to environmental factors in general and in particular to geographical conditions in those locations where the need for hydrological management fostered the development of hydraulic engineering. The list could easily be elaborated: racial characteristics, cultural collapse, witch-hunting, suicidal behaviour, senses of national identity, legislative systems, business fluctuations, moral standards – all these, and many more, have been put down to environmental influences of one sort or another. That this inclination is widespread even in our time is evident from the following observation that opened a piece in the London *Times* on Saturday 5 May 2001: 'Months of record rainfall are to blame for rats, divorce, political plots, overweight women and dead bees, according to the French!' (Bremner 2001).

Not surprisingly, environmental determinism has also been freighted with cultural interests. At the scale of disciplinary politics, it was widely embraced as a defining principle for the newly professionalizing geography in the decades around 1900 as its recently minted practitioners sought to carve out a

secure niche for their pursuits in the rapidly expanding division of academic labour. Identifying the causal role of physical environment in determining the shape of global diversity gave a coherence and significance to the task of bringing human society within the ambit of geographical science. At a different scale of operations, environmental determinism has been read as a legitimating ideology underwriting imperial impulses towards conquest and conflict. The basic idea here is that the naturalistic cast of environmental determinist rhetoric could deliver a scientific justification for the inevitability of imperial expansionism. (And since global geography dictated colonial politics, geography as a discipline took pride of place as the Victorian science of empire *par excellence*). At other points in time and place, confidence in the moulding power of physical environments has served the interests of racial theorists of one stripe or another – either to condemn certain peoples as the product of inherently defective geographies or to insist that ‘racial constitution’ was pliable and thus subject to environmental modification. Given these fixations, it is not surprising that environmental determinism has found itself connected – on different sides – with such political causes as immigration restriction, eugenics and apartheid.

The following historical sketch will touch, to one degree or another, on many of these themes while at the same time disclosing just how persistent the lure of environmental determinism has been at least since classical times. Throughout it will be wise to bear in mind that the ‘determinism’ in environmental determinism comes with varying degrees of compulsion. Philosophical interrogation of such causal verbs as ‘determine’, ‘influence’, ‘condition’, ‘shape’, ‘control’, ‘steer’, ‘mould’ – all of which have been attached to environmental adjectives – would doubtless have epistemic value. But allocating precise definitions to their different nuances would be to impose philosophical precision on historical ambiguity. Epistemological exactitude, then, is not my quarry in what follows;

rather the aim is to map out something of the major dimensions of what is commonly called environmental determinism since classical times.

The whole subject, moreover, is further complicated by two significant strands of thought and practice. First, knowledge of ‘the environment’ and ‘nature’ is itself a cultural product. The practices of science, and the means by which its practitioners glean warranted knowledge of the natural world, are now widely recognized as the products of local venues, which then unevenly spread from their point of origin out into general commerce. That science has a geography, no less than a history and a sociology, recalls attention to the cultural nature of knowing and to the relevance of space, site and location in its generation. This reminds us of the inherent instability of scientific meaning and thus of the flexibility in how nature and environment have been conceived. Secondly, and this is a theme that grips the imagination perhaps more now than ever, the environment itself is a cultural product inasmuch as it bears the stamp of human action and transformation. Fears about the consequences of global warming and the determining influence these will have on history are thus, in part, anxieties about the ways in which a humanly transformed environment may wreak revenge on environmentally transformed humans.

## **HIPPOCRATIC HUMOURS AND THEIR LEGACY**

While the idea that the world’s climatic zones – frigid, temperate and torrid – determined global habitability can be found in the writings of Aristotle, the classical source of the idea of environmental influence is generally attributed to the Hippocratic text, *On Airs, Water, Places* (Glacken 1967). Regardless of precisely who the author of this celebrated treatise actually was, the text connected the characteristics of people in

particular places to the influence of such environmental factors as humidity, altitude and terrain. In the main this perspective was sustained through the humoral theory which coupled the operation of the body's good or bad humours (blood, yellow bile, phlegm, black bile) with the conditions of air, water and places. Only when the humours were perfectly mingled did the individual enjoy good health, and so, in critical ways, the human body was subject to environmental influences. When generalized to populations, this principle could give support to the idea that warm climates breed passionate people, frigid zones produce hardness, while temperate regions generate intellectual excellence. Typical of such reasoning was the Hippocratic declaration that inhabitants of

places which are low-lying, abounding in meadows and ill ventilated, and who have a larger proportion of hot than of cold winds, and who make use of warm waters – these are not likely to be of large stature nor well proportioned, but are of a broad make, fleshy, and have black hair; ... courage and laborious enterprise are not naturally in them ... Those who live on thin, ill-watered, and bare soils, and not well attuned to the changes of the seasons, in such a country they are likely to be in their persons rather hard and well braced, rather of a blond than a dark complexion, and in disposition and passions haughty and self-willed. Hippocrates 1849: 24.

The doctrine of environmental causation, frequently in its Hippocratic guise, found other supporters in the ancient world. Thucydides dwelt on the influences exerted by soils, site and location on the stability or otherwise of cultural traditions, while Xenophon focused on the historical significance of maritime power and the distribution of resources. In Plato's longest dialogue, the *Laws*, the relationship between virtue and place featured insofar as he considered that maritime locations rendered their inhabitants vulnerable to cultural incursion, and thus dilution. As for Aristotle, his understanding of the impact of climate on society ended up with 'the self-flattering conclusion that the most advanced nations are in the temperate

climates' (Glacken 1967: 93). In the *Problemata* he presented in interrogative form a series of assertions presuming that peoples inhabiting conditions of excessive cold were brutish in character and that wisdom was the preserve of the inhabitants of warm regions.

In one form or another, the Hippocratic vision continued to captivate writers throughout the Medieval and Renaissance periods. Classical thinking on the subject was transmitted to the Christian West quite early through the work of Isidore of Seville during the late sixth and early seventh centuries which attributed various presumed national characteristics – Roman seriousness, Greek light-heartedness, African cunning, and such like – to environmental causes. Later, in the thirteenth century, Albertus Magnus, in all likelihood drawing on Islamic versions of classical sources, perpetuated the idea that various human attributes were shaped by the characteristics of the globe's *klimata* and their subdivisions. At the same time he insisted that more local geographical circumstances were no less active in shaping human bodies and bones (Kimble 1938). During the Renaissance, climatic imperatives were frequently tied, as in the case of Bodin, to astrological convictions that linked the microcosm of the body with the macrocosm of the heavens (Wands 1986). Mobilizing the humoral theory, he championed the idea that illness, sexual activity and national traits were attributable to climatic conditions. Earlier in the sixteenth century Machiavelli had insisted in his *Discourses on Livy* that fertile soil bred idleness and that laws needed to be put in place to offset this adverse impact. In Machiavelli's hands, environmental causation was part and parcel of a larger critique of the traditional humanist valorization of timelessness by rooting politics in the messy realities of time and space (Palmer 1984).

In England, ideas about environmental causation circulated widely. One group of writers expressed their fears about the adverse effects of a cold climate. In part these concerns were stimulated by the appearance in

English in the early seventeenth century of Giovanni Botero's work *Relations of the Most Famous Kingdomes* which used the humoral theory to support his judgement that northern climates produce strong bodies, courageous spirits, but retarded mental powers; for their part southerners were depicted as physically weak but intellectually subtle. Similar sentiments were also translated from an anonymous French author in 1591 in which the coldness of the air was portrayed as the source of gross northern humours. Given the obvious implications for the English, it is not surprising that the theory of environmental determinism received considerable attention in England. In the early seventeenth century Thomas Wright, for instance, judged that southern political cunning was lacking in northern regions, while John Barclay made a point of saying that while climatic determinism was generally true, there were always notable exceptions. It also made a conspicuous, if ambivalent, appearance in the writings of John Milton. At points during the English Civil War when he felt frustrated by the activities of the non-conformists, he was inclined to turn to the climatic theory to justify his disappointment at their headstrong, foolish and uncivil ways. At such times he craved the introduction of civic virtues from warmer climates. After all he did assert in his *Character of the Long Parliament* that 'the sun, which we lack, ripens wits as well as fruits; and as wine and oil are imported to us from abroad, so must ripe understanding, and many civil virtues, be imported into our minds from foreign writings' (see Fink 1941: 74–5).

Medical practitioners, too, continued to conduct their inquiries during the sixteenth and seventeenth centuries in dialogue with the Hippocratic tradition. Thus the seventeenth-century English physician Thomas Sydenham, although criticizing elements in Hippocrates' thinking, nevertheless retained critical components of the humoral theory, as did other workers on medical topography. A century later, the German medical historian Kurt Sprengel exhibited his confidence in the

soundness of the Hippocratic vision drawing on the authority of figures like Boerhaave, van Swieten and Morgagni. In 1781 William Falconer resorted to Hippocrates at numerous points in his account of the influence of climate, situation and population on human disposition, government and religion. Thus in one way or the other, the Hippocratic humours continued to exert their influence on medical geography until well into the modern period (Miller 1962).

### ENLIGHTENMENT, ENVIRONMENT AND RACIAL POLITICS

The extensive circulation of environmental doctrines during the period of the European Enlightenment owed much to the writings of Montesquieu, and in particular to *The Spirit of the Laws* (1748). Certainly others had cultivated the idea of environmental causation, notably the Abbé Dubos and John Arbuthnot. But Montesquieu's project of locating legislative regulation within the framework of geographical conditions in which they are to be found, was especially influential. Drawing on a mushrooming travel literature, Montesquieu urged that climatic conditions governed both the rise and decline of cultural traits, and thereby – as it were – brought law down to earth from the lofty sphere of transcendence. Because everything from human physiology to legislative customs, from religious principles to moral standards, were geographically conditioned, he presented the case for cultural relativism. The mechanism by which these causal operations were transacted was the composite product of the Hippocratic humours and the physiological theories of figures like Boerhaave which encouraged him to conceive of the nervous system as consisting of tiny tubules that carried what he referred to as animal spirits, or nerve fluid, around the body. This understanding of the human constitution allowed him to speculate that, for example, inhabitants of cold climates were more vigorous

since the fibres in their cardiovascular systems contracted in cold air and stimulated faster flowing of the blood. Warm air, by contrast, relaxed and lengthened 'the extremes of the fibres' (Montesquieu 1750: 316). Not surprisingly, given the extensive reach of climatic determinism, he famously observed, 'The empire of the climate is the first, the most powerful of all empires' (Montesquieu 1750: 327).

Montesquieu-style environmental determinism attracted many willing advocates. Buffon, for example, added his support assigning to climate a major role in the generation of racial diversity. To him, the human form was remarkably pliant in the hands of climate. In the New World – much to the disgust of Thomas Jefferson – he claimed that an inferior environment had produced a degenerate anthropology and an impoverished biogeography (see Gerbi 1973). Yet these influences were neither permanent nor irreversible; rather they were simply the superficial imprint of environment on a common constitution. Later in the eighteenth century the medical anthropologist Johann Friedrich Blumenbach added his support, arguing that racial divergence was caused by climate and habitat. Owing to the persistent influence of the environment, he was certain that rigid boundaries between racial groups could never be drawn. 'Races' simply merged into one another and were persistently undergoing modification in response to environmental stimuli. For more popular audiences, the Anglo-Irish man of letters and sometime medical practitioner Oliver Goldsmith in an essay on the subject 'Of the Varieties of the Human Race' likewise insisted that variations in climate, diet, and the like were sufficient to explain racial divergence. As with Blumenbach, environmentalism in his hands happily confirmed the unity of the human race and common descent over against an increasingly fashionable polygenism (see Livingstone 2008).

It was the same with the American moral philosopher Samuel Stanhope Smith, who turned to environmental influences in the

first American treatise on anthropology to preserve the unity of the human race from the assault of Scotland's Lord Kames who was flirting with the idea of multiple human origins. Climatic determinism, in Smith's hands, was canvassed to underwrite a common human nature and the superficiality of racial difference. In 1774, Kames had launched a protracted attack on the power of climate to explain human variation and in particular on Montesquieu, that 'great champion for the climate' (Kames 1817: vol. 1, 32). Cultural mores, social customs, skin colour, skeletal structure, differences in the very 'fibres' on which Montesquieu's entire edifice was erected – these physical and moral traits were not to be thought of as environmental products; rather they were intrinsic to difference racial groups. As a staunch opponent of environmental determinism, Kames was sure that particular climates had not made races, but that races were made for particular climates. Soon supporting voices were to be heard. The eighteenth-century Royal Navy surgeon, John Atkins, thought climate powerless to explain racial differentiation and looked to what he called originally different proto-plasts; so too did the surgeon, Charles White, who argued the case for multiple origins; and the English lawyer and antiquary, Edward King, rejected Montesquieu's climatic thesis despite its ingenuity arguing that the human races were inherently different species or castes.

Smith would have no dealings with such speculations. To him racial differences were literally only skin deep and were simply an epiphenomenon of physical environment. To be sure this did not amount to racial egalitarianism; but it did confirm that racial features were mutable and that differences would largely vanish if peoples were exposed for a sufficient period of time to the same environmental stimuli. Culling a wide range of medical, anthropological and geographical literature, Smith concluded that the unity of the human constitution, inflected in superficial ways by the vicissitudes of environment, was good science. Indeed he paused to issue

biting criticism of those travellers who were only too willing to generalize from any 'little deviation from ... the ordinary standard' (Smith 1810: 84). It was also good politics, and good moral philosophy too. For much was at stake in human unity. The whole stability of society and the maintenance of the social order presumed a common humanity. If there were inherently different human constitutions, the 'foundations of duty and morals, and ... the whole science of human nature' would be undermined. 'No general principles of conduct, or religion, or even of civil policy' he went on 'could be derived from natures originally and essentially different from one another' (Smith 1810: 149). In the brand new republic of the United States – a society seeking for means to regulate itself in the aftermath of revolution – environmental causation facilitated political stability.

Immanuel Kant, too, looked to climate as the source of racial variation, though with rather less benign eyes. In his 1775 essay 'On the Different Races of Man', Kant identified four distinct varieties of the human species each with its own natural dispositions. Here he made reference to what he called the 'stem genus' of each race and specified 'that portion of the earth between the 31st and 52nd parallels in the Old World' as the zone 'in which the most happy mixture of influences of the colder and hotter regions and also the greatest wealth of earthly creatures is encountered' (Kant 1950: 23). Conversely, as he made clear in an exposition of national characteristics as reflected in the aesthetic and moral 'feeling of the beautiful and sublime', inhabitants of other zones enjoyed 'no feeling that rises above the trifling' (Kant 1997: 47, 55). Given these sentiments, it comes as no surprise to find Kant, in his lectures on *Physical Geography*, elaborating a global cartographic in which the temperate world was exalted to the apogee of human excellence: in 'the hot countries the human being ... does not ... reach the perfection of those in the temperate zones. Humanity is at its greatest perfection in the race of the

whites'. By contrast 'all inhabitants of the hottest zones are exceptionally lethargic', he insisted, while the 'inhabitant of the temperate parts of the world ... has a more beautiful body, works harder, is more jocular, more controlled in his passions, more intelligent than any other race of people in the world'. And the political fallout? 'That is why at all points in time these peoples have educated the others and controlled them with weapons' (Kant 1997: 63–4).

### **GEOGRAPHICAL SCIENCE, ENVIRONMENTAL DETERMINISM AND DISCIPLINARY IDENTITY**

Notwithstanding the critiques of figures like Herder during the second half of the eighteenth century, environmentalism flourished in the early nineteenth century among those like Henry Buckle who sought for a historicist history that subjected human activities to natural law; among regional sociologists like Frédéric Le Play who causally connected up work, family and place; and among ethnologists who accounted for racial differentiation in climatic terms (Stocking 1987). It also found expression in the writings of some philosophers enamoured of teleological metaphysics like Victor Cousin who gave the impression that national psyche could be read straight off topographic cartography: '[G]ive me the map of a country ... and I pledge myself to tell you, a priori, what the man of that country will be, and what part that country will play in history, not by accident, but of necessity' (quoted in Febvre 1932: 10).

With the advent of Darwinism, inclinations of this sort found further reinforcement with the renewed emphasis on a naturalistic construal of human culture in the categories of natural law. This impulse acted to encourage various forms of environmental causation among those writers working on the interface of geography, history and anthropology who continued to read the human

story through racial lenses. The role of natural environment in shaping racial 'progress' was thus emphasized in writings on physical anthropology like that of A.R. Wallace, John Lubbock and A.H. Keane all of whom found in the physical environment the grounds of racial 'progress' (Stepan 1982), while sociological theorists like Edmond Demolins reduced ethnic character and the genesis of civilization to patterns of communication. Throughout, the conviction was that human culture was ineluctably shaped by 'nature'.

Not surprisingly such currents of thought were clearly registered within the geographical tradition and increasingly came to be seen as the foundation stone on which the discipline of geography could be erected. After all, both Friedrich Ratzel and Oscar Peschel in Germany acquired distinguished reputations in anthropology as well as geography. Time and again, the conceptual legitimacy of environmentalist geography was sought in evolution theory, though there is evidence to suggest that it was the neo-Lamarckian rendition of evolution, rather than classical Darwinism, that was more commonly resorted to. Ratzel's *Anthropogeographie*, with its cardinal notion of *Lebensraum* (living space) and his organic conception of the state, drew sustenance from the migration theories of the Lamarckian Moritz Wagner; and while the environmental determinist element in his early work has perhaps been overestimated, the evolutionary outlook of figures like Wagner and Haeckel did much to legitimate any such tendencies in his project. The prominence that *Lebensraum* received as part of Nazi ideology in the early twentieth century has given rise to the impression that Ratzelian environmental determinism was easily absorbed into the race-theory of the Third Reich. But in fact the presumption of racial plasticity that was embedded in Ratzel's environmentalism never sat easily with the genetic racialism and the obsession with race hygiene that was firmly lodged in the Nazi Volkish mindset (Livingstone 1992).

The Ratzelian programme, in one form, found its American voice largely through the

writings of Ellen C. Semple. Her *American History and Its Geographic Conditions* (1903) and *Influences of Geographic Environment* (1911), while perhaps not so crude as some commentators have implied, nevertheless did much to establish environmental determinism as the dominant mode of explanation in American geography during the early decades of the twentieth century and as the foundation on which the newly professionalizing subject could erect its identity (Keighren 2006). In fact she affected to dissociate herself from determinism, yet determinist sentiments dominated her thinking as the opening passages of *Influences* abundantly attest:

Man is the product of the earth's surface. This means not merely that he is a child of the earth, dust of her dust; but that the earth has mothered him, fed him, set him tasks, directed his thoughts, confronted him with difficulties that have strengthened his body and sharpened his wits ... She has entered into his bone and tissue, into his mind and soul. Semple 1911: 1.

Other forces had also conspired to buttress this orientation. In the writings of the American historian Frederick Jackson Turner, for example, similar sentiments found voice. Rejecting the common assumption that American institutions and traits were the product of transplanted European 'germs', Turner proposed that it was geographical realities on the western frontier that had induced the distinctively American qualities of rugged individualism, a culture of pragmatism, energetic inventiveness and a democratic spirit. In his case too, Lamarckian metaphors of direct environmental impact featured prominently. Albert Perry Brigham and Nathaniel Shaler were no less enamoured of environmentalism. Shaler, for example, traced racial features, patterns of migration, the origins of civilization and mental powers to the vicissitudes of environmental factors like climate, insularity and topography (Livingstone 1987). Reinforcements were also forthcoming from the voluminous writings of Ellsworth

Huntington on climate and civilization during the early years of the twentieth century in which he amply displayed a predilection for racial typecasting and environmentalist explanations. Among the many connections he sought to draw between human society and environmental influence were his correlations of the distribution of civilization, genius and health with what he called climatic energy; the links he believed he could discern between ancient patterns of migration and climatic oscillations; and the weather's impact on 'nervous activity'. In Huntington's scenario, statecraft, economic forces, religious impulses, technological innovations, and so on, paled into insignificance beside the dominating power of environment. And yet we need to exercise care not to fall into historical stereotype. For even while he read human history through environmental lenses, Huntington constantly reiterated the importance of genetic constitution and thus threw his weight behind various eugenic enterprises.

Elsewhere during the early years of the twentieth century similar conceptual manoeuvres were discernible. Griffith Taylor, for example, advocated what he called 'stop and go' determinism in the attempt to modulate the shrillest tones of inexorable necessitarianism. Yet he remained convinced, as he put it in *Environment and Race* (1927), that the physical environment was the most potent element in shaping both biological and social evolution. In Britain Halford Mackinder who, at one point, insisted that the only rational basis for human geography was as a causal science built on physical foundations, nevertheless left space for humanity's taking the initiative from nature through the exercise of what he came to call the Going Concern.

Environmentalism in one or other guise, then, acted as a critical focal point for geography's disciplinary identity in the decades around 1900. Even those who professed their belief in possibilism and probablism displayed much greater ambivalence than is usually imagined. Vidal de la Blache, for instance, insisted that *genres de vie* were

themselves reflective of nature even as they engaged in its transformation, and it would therefore be mistaken to consider his to be an altogether radical voluntarism. Never psychologistic, Vidal always conceived of human geography as a *natural*, not a *social* science. Similarly, the anthropologist Franz Boas's polemical crusade against an unsophisticated environmentalism (a campaign that influenced Carl Sauer's repudiation) must not be taken to imply an entire dismissal of the conditioning power of environment, as is clearly evident in his celebrated study of the environmental modification of the immigrant headform. In the light of such revelations it seems that the labels 'determinism' and 'possibilism' were retained with a degree of polemical typecasting compatible with the suspicion that other interests were at stake in the controversies, even while reinforcing the claim that the relations between environment and culture was at the heart of geography's disciplinary concerns.

Considerable debate on the subject also characterized Soviet geography. With the official endorsement of the agronomist Lysenko's biological Lamarckism, and the stimulus of Plekhanov's evolutionized Marxism that causally connected the forces and relations of production to natural environment, environmental determinism enjoyed considerable support among the Russians, despite the early critiques of Karl Wittfogel. In this adoption of the doctrine by the far left, Plekhanov's borrowings from Ratzel were decisively significant, and he used it to contest racial theories of social development and to explain what he considered to be the backwardness of his native Russia. To him Russian history was the outcome of its 'peculiar geographical milieu' as indeed all history was 'controlled by the conditions of the natural environment' (Bassin 2003). During the second quarter of the century many more came to query environmental determinism in the wake of Stalin's repudiation and the official banning of Lysenkoism in 1948. Yet despite such spurnings, Anuchin felt justified in reasserting the salience of at least a



neo-determinism because he was convinced that classical Marxism was implicated in the attempt to trace causal links between the material and the social.

## ENVIRONMENTAL DETERMINISM REDIVIVUS

For all the criticisms to which environmental determinism was subject during the middle decades of the twentieth century, it has emphatically not disappeared from the intellectual horizon. Rostlund's acerbic quip in 1962 that 'environmentalism was disapproved, not disproved' would seem to have retained committed defenders (Rostlund 1962: 49). In several different arenas the doctrine has resurfaced with marked intensity in recent years. Take, for example, the fundamentally ecological reading of the development of science by Harold Dorn in 1991. This account congregated around a Wittfogel-style narrative that attributed the development of science to the actions of those societies requiring hydraulic management and thus techno-scientific initiative. To explain the development of science, Dorn looked to 'soil, climate, hydrology, and topographical relief, and to demographic fluctuations, latitude, and the differences between sown fields, steppe, and desert'. Not surprisingly he found that the writings of Ellen Semple still 'remained fresh' and insisted that Ellsworth Huntington's 'thesis was never really refuted' (Dorn 1991: xi, xii, xix).

Yet more recently, a good deal of debate over environmental determinism has rotated around the interventions of the evolutionary biologist and now professor of geography at UCLA, Jared Diamond. In a number of high-profile works, notably *Guns, Germs and Steel* (1997) and *Collapse* (2004), he has pointed to the critical role played by environmental influences in human history. With a powerful inclination to play down ethnic, cultural or individual components of historical change, Diamond sees the physical environment as

the prime driver of humanity's story. Successes in animal and plant domestication, patterns of diffusion and migration as shaped by ecological-geographical barriers, and continental differences in population size are called upon to explain Western dominance of the globe. By the same token such factors as desertification, energy depletion, soil salinization, pollution, deforestation, erosion and overpopulation are judged to be critical factors in why cultures collapse. Physical environments thus play the dominant role in determining who wins and who loses in humanity's struggle for existence, for geographical locations have directly affected the capacity of societies to develop crucial agricultural institutions and to acquire immunity to particular diseases. Thus, when seeking for an explanation for the triumph of Europe, he resorts to matters of topography: its highly indented coastline and the presence of high mountains carving it up into a mosaic of regions account for Europe's rise to dominance. Not surprisingly when asked in an interview with *National Geographic News* in July 2005 why, over the past 10,000 years, different societies have developed at different rates, Diamond replied: 'I say the answer is location, location, location' (Lovgren 2005). For all that, in the same conversation, Diamond insisted that his perspective was not environmental necessitarianism. 'People have a misunderstanding that geography means environmental determinism', he observed, 'and that poor countries are doomed to be poor and they should just shut up and lie down and play dead. But in fact, knowledge is power. Once you know what it is that's making you poor, you can use that knowledge to make you rich'.

For all his protestations to the contrary, critics have not been slow to highlight what they see as geographical fatalism in Diamond's writings. Andrew Sluyter, for example, dismissed what he described as Diamond's 'Neo-environmental Determinism' as variously 'junk science', 'pernicious', and 'absurd' (Sluyter 2002: 813, 814). What he found particularly objectionable was the naturalization of destiny, inasmuch as

'the horrendous living conditions of millions of people' were attributed to 'natural fate'. While acknowledging that Diamond eschews Eurocentric racisms, Sluyter discerns the self-same determinist impulses in his writings and laments the popularity that *Guns, Germs and Steel* has acquired. In comparable vein, James Blaut (1999) accused Diamond of perpetuating a Eurocentrism that looked to the supposed superiority of Europe's natural environment as the grounds of its rise and triumph. Blaut's assault is two-pronged. First, he charges Diamond with being blind to the causal role of human culture in historical change by choosing to dwell on the links between environment and agriculture. Secondly, he presents challenges to the 'three primordial environmental facts' – the shapes of continents, the distribution of plants and animals susceptible to domestication, and geographical barriers to diffusion – that Diamond resorts to as ultimate explanations. For example, Blaut fastens upon Diamond's resort to what he calls continental 'axes' to explain diffusion arguing that east–west axes are more favourable for agricultural spread than north–south axes. Blaut questions the facticity of this claim, but also discerns beneath it a valorizing of the temperate world and a denunciation of the tropical through claims about the climatic advantages of mid-latitude regions. If Blaut's analysis is well founded, an agricultural version of the moral climatology that in earlier times was used to castigate the tropical ecumene is plainly discernible. It connects too with Dorn's ecological account of the rise of science for Diamond's attribution of superiority to European culture is predicated on its supremacy in the cultivation of natural science since the seventeenth century.

Blaut also gathered within the radius of his withering critique, the analysis of the historian David Landes as to why some nations are so rich while others remain poor. For Landes, the explanation is to be sought in climate, soil, topography, vegetation and nutrition as well as innovation, cultural values, reproductive habits and institutions.

Again, Blaut perceives a strong inclination towards tropical denigration in Landes's account inasmuch as tropical climate is accorded a causal role in economic underdevelopment. He reports too that Landes finds in climate an explanation for the practices of slavery because 'Europeans could not work under the hot sun, so it was somehow natural to force Africans to work on the plantations' (Blaut 1999: 405). And of course this sits alongside a corresponding eulogising of what Landes describes as the 'far more favorable conditions in temperate zones; and within these, in Europe above all; and within Europe, in western Europe first and foremost' (Landes 1998: 17).

Plainly environmental determinism is alive and well in contemporary scholarship. As further testimonial, reference could be made to the range of research on palaeoclimatic shifts during the Holocene. In their review of the pertinent literature, Coombes and Barber identify something of the scope of work connecting climatic change to cultural collapse, notably, in the cases of the Akkadian, Egyptian, Mayan and Moche civilizations. While acknowledging that environmental perturbation may indeed have some impact on demographic and economic patterns, they consider that 'the present claims of environmental influence upon past cultural transitions should still be treated with a degree of skepticism' (Coombes and Barber 2005: 309). Other cases could be elaborated showing the degree to which environmentalist explanations continue to attract the public eye. The Columbia University economist Jeffrey Sachs (2001), for example, has attributed the uneven spread of capitalism to what he terms the poorer geographical endowments afflicting some regions which operate under a kind of geographical blight on account of their soil poverty, climatic extremes, and devastating diseases. Again the bane of the tropics stands in marked contrast to temperate blessings. Indeed there is some justification for the suspicion that, at least on some occasions, environmental determinism underlies the

current apocalyptic anxieties over climate change. The political ecology of shifting weather patterns comes to the forefront in the observation, published in *Weather*, that while 'it may never be possible to prove absolutely that a mild climate in mid-latitudes helps to foster a tolerant society or that an extreme climate may predispose people towards intolerance ... the historical record is highly suggestive' of just such connections (Beck 1993: 63–4). And as one final instance, we might note the observation, reported in the *New York Times* on 7 January 2007, that according to the climatologist Michael Mann, Washington's lack of political will, compared with other cities, to curb carbon emissions could be attributed to the fact that east coast of the United States 'did not warm nearly as much as rest of globe over the twentieth century' (Revkin 2007).

Given the stimulus that environmental determinism has received for more than a century from Darwinian natural selection with its resolute insistence on the supreme efficacy of organic adaptation to environment, it is worth calling attention to the challenging proposals recently forthcoming from advocates of what is popularly known as evo-devo, namely evolutionary–developmental biology as promulgated by Stephen Jay Gould and Richard Lewontin among others (Amundson 2005). This growing tradition of research challenges the supremacy accorded to adaptation to ecological conditions in evolutionary history by drawing attention to structural characteristics of the phenotype which undergo modification and the production of novel features independently of adaptation. Mechanisms of gene regulation, it is claimed, may play a much more extensive role in evolutionary transformations than traditional neo-Darwinian natural selection. If this account is in the right neighbourhood then the impulse to seek explanations for everything – from the development of music to the structures of the human mind – in the mechanisms of

adaptation to environmental demands is much relieved. If the contemporary debates on a resurrected environmental determinism necessarily touch on matters of human agency, political culture and economic forces, they no less need to engage in dialogue with developments in evolutionary embryology and structural genetics.

## CONCLUDING REMARKS

Environmental determinism has taken many shapes and forms over its lengthy history and any coherent account of its narrative will have to take seriously the different purposes to which it has been put, as well as the plural origins from which it has sprung. There is no doubt that it has subserved the interests of both imperialism and Eurocentrism as has often claimed (Peet 1985; Frenkel 1992). But its manifold dimensions cannot be reduced simply to these forces, critical though they surely have been. Environmental determinism has engaged significant epistemological questions in the philosophy of science and social scientific explanation (Martin 1951; Montefiore and Williams 1955). It has shaped attitudes to labour practices, race relations, housing policies, and the management of colonial regimes, sometimes nourishing an imperial mindset, on other occasions underwriting cultural pluralism. It has contributed, often in contradictory ways, to questions about human anatomy and disease, mental health and moral philosophy, medicine and hygiene, plant and human acclimatization. Within geography, its naturalization of human history provided many with what they considered to be a scientific basis for the subject as a modern university discipline. In our own time it continues to manifest itself in broad-brush accounts of cultural collapse, and to lurk beneath the surface in debates congregating around the impact climate change is predicted to have on the future shape of human history.

## ACKNOWLEDGEMENTS

I am most grateful to John Agnew, Noel Castree and Nuala Johnson for exceptionally helpful comments on an earlier draft of this chapter.

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