

Biological determinism

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Definition and origins

Biological determinism (also known as “biologism,” “biodeterminism,” and “biological essentialism”) can be defined as a tendency to seek biological explanations for human social phenomena. The term can also be applied to explanations of human phenomena in which *both* social *and* biological factors are involved (such as the “embodiment” of social disadvantage in the elevated morbidity of poorer individuals), and in which there is scope for considering which of these factors might be the ultimate or proximate cause.

Biological-deterministic explanations have four key features: (1) they are “reductionist” (i.e., they suggest that complex phenomena can be explained by simple causes); (2) the causes they infer are “essential” (i.e., they originate in human biological characteristics); (3) such causes are “immutable” (i.e., they are *determined* by “essential” characteristics); and (4) the explanations are “atomistic” (i.e., they operate at the level of each individual human being, and are therefore not the product of societal or cultural processes). These four features characterize biological determinism as a common trope within historical (and contemporary) scientific (and lay/folk) explanations (and justifications) for a multitude of social phenomena. They underpin the enduring importance afforded to biology as the primary and essential framework within which all human phenomena are expected to operate—a framework in which only secondary importance is attributed to environmental factors (be these physical, natural, or social) in what has been characterized as the “nature versus nurture” debate.

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Philosophical underpinnings

Philosophical rationalizations of nature, biology, and heredity as the primary factors underlying human social phenomena date back at least to the works of Plato and Aristotle in the fourth century BCE. Philosophers of the sixteenth and seventeenth centuries, including Thomas Hobbes (1588–1679) and John Locke (1632–1704), derived “natural rights” from the fundamentally *biological* nature of the self-interested tendencies necessary for survival. These rights were interpreted as both normative (i.e., fundamental properties of all humans, given the constraints of the natural world) and theological (i.e., “laws of nature”, interpreted as expressions of Divine will).

All these accounts share two key cognitive flaws: the “naturalistic fallacy” and the “naturalizing error.” The naturalistic fallacy assumes that what is *seen* in nature (and therefore in biology) is “natural” and just as it should be—an assumption that was effectively demolished by the eighteenth-century philosopher David Hume, who observed simply that “is” does not imply “ought” (Hume 1738, 3.1.1.27). The naturalizing error, as characterized by the American philosopher Douglas Allchin, assumes that much of what is *seen* in nature is what is *expected* of nature (and is therefore normalized as such—in effect, “ought” implies “is”); hence, because what we expect is partly socially constructed and partly determined by what we have seen before, “idealizations and assumptions about normality have shaped common erroneous biological concepts: male and female; developmental abnormalities; competition in evolution; and laws of nature” (Allchin 2008) in ways that both reflect and reproduce explanations that facilitate biological determinism (Allchin and Werth 2016).

Development of science-based biological determinism

The American evolutionary biologist Richard Lewontin (1983; Lewontin et al. 1984) has argued that what might be termed “modern” (or

“science-based”) biological determinism emerged over 200 years ago in the invocation of anatomical differences as explanations for social phenomena, such as gender- and race-based hierarchies (see RACIAL HIERARCHY (HISTORY, CLASSIFICATION OF MODERN HUMANS)). However, since these explanations were based on phenotypic differences known to be subject to *both* genotypic *and* environmental factors (i.e., differences in crude anatomical characteristics), they have been subjected to extensive scientific critiques. Similar “phenotypic critiques” have been applied to explanations based on subsequent advances in human physiology and biochemistry. However, recent breakthroughs in the field of genetics have led to a resurgence in biological deterministic explanations and to the emergence of what has been termed “genetic determinism”—the tendency to seek such explanations within genetic causes. While genetic determinism has also been subject to “phenotypic critiques” in the light of ongoing discoveries in epigenetics (from which it is now clear that genotypic expression is, itself, susceptible to environmental influences (see EPIGENETICS)), current critiques of biological determinism have also involved examination of the social, cultural, and cognitive processes that produce, reinforce, and reward the tendency to view human social phenomena through a biological lens.

Social and scientific consequences of biological determinism

Much of the literature on biological determinism focuses on the normalization of differences between different social groups that have been attributed to biological causes, and on the supposed immutability of such differences. Group classifications based on gender, ethnicity, sexuality, and disability have all been subject to essentialization and biological determinism. In general, the accounts offered by biological determinists assert that the individual biological traits that confer membership in these groups are responsible for the defining social characteristics observed, and that the biological basis of these renders any related inequality inevitable

and amenable only to therapy and not to prevention. In many instances, the constraints on agency imposed by biological determinism have been rejected as oppressive in character and/or intent. However, there are also examples where the resources available for protective or remedial action (including the legal protections and advantages available to some groups so classified) have encouraged the groups concerned to embrace biological determinism and thereby validate and “biologize” group membership in these terms (as evident in the role of gay activists in the search for the “gay gene,” or in applications by minorities for recognition as bona fide “racialized” groups).

Researchers studying the biological basis of heredity and the role of heritable processes in social phenomena have been particularly susceptible to the critique that their work is biologically deterministic. For some, this critique has aligned their work with the discredited endeavors of eugenics (see EUGENICS) and racial hygiene, leading to intense scientific and public hostility and adverse professional consequences. It is therefore not surprising that many scientists have been fearful of examining the potential role that biological causes might play in social phenomena, and have diverted their attention instead to alternative questions (or to species other than humans). It is also not surprising that those examining human genetic variation have chosen to sanitize their work by adopting “politically correct” and socially acceptable concepts and terms (such as “ethnicity” rather than “race,” and “gender” rather than “sex”), even when these are scientifically inappropriate within the contexts so used. There remain, nonetheless, those scientists (and public commentators) who court controversy through their use of biological deterministic arguments and explanations. Critical scientific and popular responses to such controversies risk a number of unintended consequences: they can manifest solely as differences in scientific or political opinion (particularly when misconstrued biological causes of social phenomena appear “self-evident” and therefore *valid* topics for scientific enquiry and political conjecture); and they can discourage or proscribe enquiry into *any* potential biological causes of social phenomena (as if no such enquiries were scientifically *valid* or politically respectable).

Contemporary analyses of biological determinism

The tendency to seek biological explanations for human social phenomena reflects not only the scientific and folk beliefs and theories invoked in those explanations (especially those in which biological causes are paramount), but also the subliminal cognitive biases that privilege biological explanations over social and political accounts. All of these can be the product of, and subject to, cultural conditioning. All forms of biological determinism are grounded in invocations of phenomena perceived as “natural;” in beliefs in the central role of biology in such phenomena; and in beliefs in the heritable character of *all* biological (and “natural”) traits. This network of properties reflects and reinforces prevailing conceptions of all human variation (both biological and social) as ultimately prescribed and constrained by the genetic attributes of individuals (and, through kinship or association, of the groups to which these individuals are assigned). Where this serves the purposes of an argument, the genetic attributes involved can also be presented as consequences of the “natural history” of the species, or of specific (sub)groups and individuals therein.

Within this framework, the constraints of the heritable determinants known to be genetic (albeit now, also, epigenetic (see EPIGENETICS)) are viewed as imposing limits on the variation of phenotypic traits possible in response to environmental circumstances. In this way, even where phenotypic variation is possible, the *extent* of this variation can be viewed as inevitably “determined” or “constrained” by the underlying heritable attributes. Biological determinism reflects the logic of such constraints. It represents, as Stephen J. Gould (see GOULD, STEPHEN J.) (1996) called it, “a theory of limits.” Many biological determinists extend these limits not only to phenotypic traits such as maximum attainable stature, but also to the “emergent properties” grounded in behavioral, social, and cultural practices—for example, sex-specific gender roles such as hunting versus gathering.

At one extreme then, biological constraints/limits can be represented as “prescriptive;” that is, as imposing such a limited range of “all of

that is possible” as to make a lot of what is “possible” actually *inevitable* or *mandatory*. At the other extreme, biological constraints/limits can be thought of as “permissive;” that is, as providing an array of “canvasses” (or “blank slates”) on which different human biological and social characteristics can emerge as determined and modified by the environment. On such “canvasses,” heritable biological features would exert control *only* over the *scope* of phenotypic variation possible—a scope that might itself vary for different biological and social features and within different physical, natural, and social contexts. This “permissive” view of biological constraints/limits does not exclude the existence of *some* “prescriptive” traits, but recognizes the potential for extensive human phenotypic plasticity within a patchwork of interdependent narrow *and* broad biological “canvasses.” In such a patchwork, genetic (and epigenetic) constraints would prescribe the phenotypes expressed only on the narrowest of “canvasses,” while physical, natural, and social “environments” would play an increasingly dominant role in determining which phenotypes can be (and are) expressed where the “canvasses” involved are broader. New social and technological advances might plausibly extend the phenotypes possible through the “environments” that such advances create, subject only to the limitations of human imagination and ingenuity.

Solutions

While the is/ought disjunction is widely regarded as Hume’s most important contribution to philosophies of knowledge, it is not surprising that the uncertainty and introspection involved led Hume to question whether rationality was possible, let alone useful:

The *intense* view of these manifold contradictions and imperfections in human reason has so wrought upon me, and heated my brain, that I am ready to reject all belief and reasoning, and can look upon no opinion even as more probable or likely than another. (Hume 1738, 1.4.7)

The cognitive biases targeted by Hume’s sceptical realism (and his self-criticism) tend to persist

because the available checks on such biases are limited to the cognitive and conceptual toolkit from which the biases themselves emerged. Allchin and Werth (2016) argue that by actively seeking alternative perspectives and alternative cognitive tools, it is often possible to identify such biases and expose them for what they are. Such perspectives can often emerge through interdisciplinary and intercultural knowledge partnerships that recognize alternative forms of experience and expertise. Thus, for example, in addressing Albert Einstein's famous advice to "look into nature and then you will understand everything better," Allchin's epistemic strategies would suggest asking: Whose conceptualization(s) of "nature" should this involve? What form should such "looking" take? From what perspectives should we "look", and through what lens? And within what frame of reference should what we see be assessed?

Those whose epistemological focus reifies the importance of "natural" biological heredity are likely to perceive human variation as determined, or at least constrained, by genetic (and epigenetic) properties. Those whose focus is on the social and cultural production of difference (including those "embodied" in the phenotypes that these differences create) may view the biologically inherited "canvasses" as broad, fluid, and subject to change (and to *multiple* interpretations). Research on each of these properties and processes may appear legitimate and essentially doctrine-free. However, concerns surrounding the consequences of biological determinism (and a preference for such explanations to the exclusion of all others) make this a politically and socially sensitive topic of enquiry, and one with consequences that we know from historical precedents to be potentially pernicious.

SEE ALSO: Biocultural models; Blumenbach, Johann Friedrich; Cranial morphology, human;

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Darwin, Charles R.; Developmental adaptation; Developmental plasticity; Dominance and recessivity (genetic); Epigenetics; Eugenics; Gene (allele); Genetic adaptation; Genetic code; Genomes; Genotype; Heritability; Measuring human biological variation; Phenotype; Phenotype (genetics); Physiological adaptation; Polygenic; Polymorphism; Quantitative variation; Race: conceptual history; Racial hierarchy (history, classification of modern humans); Sexual dimorphism (humans); Skin color; Socioecological model

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ABSTRACT

Biological determinism is the tendency to view human social phenomena (at the individual, group, and societal level) as the products of biological causes. It can be traced back to the earliest philosophical ideas regarding the biological basis of human nature, and it has played an important role in the interpretation of scientific advances in human anatomy, physiology, and genetics. By privileging biological over environmental causes, biological determinism plays a key role in the “nature versus nurture” debate—suggesting that social phenomena are essential, natural, and immutable and therefore only subject to limited modification by the contexts from which these have emerged and in which these are expressed. These features have placed biological determinism at the center of scientific and popular claims regarding the biological nature of social divisions, including gender, sexuality, ethnicity, and disability (among others). The limits these claims place on individual (and group) agency have been criticized on both scientific and philosophical grounds—first, because many such claims mistake phenotypic and genotypic traits as predominantly prescriptive and insensitive to environmental modification; and second, because they involve logical fallacies and cognitive errors that are prone to social and political bias, and serve to “naturalize” pernicious social effects.

KEYWORDS

Biological determinism; biologism; biodeterminism; biological essentialism; genetic determinism; nature versus nurture; naturalistic fallacy; naturalizing error; cognitive bias; eugenics; racial hygiene; gender; sexuality; ethnicity; race; disability