



Guns, Germs, and Steel

Paperback cover, featuring the painting Pizarro seizing the Inca of Peru by John Everett Millais

Guns, Germs, and Steel: The Fates of Human Societies is a 1997 book by Jared Diamond, professor of geography and physiology at the University of California, Los Angeles (UCLA). In 1998 it won a Pulitzer Prize and the Aventis Prize for Best Science Book. A documentary based on the book, and produced by the National Geographic Society, was broadcast on PBS in July 2005.

It was also published under the title ***Guns, Germs and Steel: A short history of everybody for the last 13,000 years.***

The book attempts to explain why Eurasian civilizations (in which he includes North Africa) have survived and conquered others, while refuting the assumption that Eurasian hegemony is due to any form of Eurasian intellectual, moral or inherent genetic superiority. Diamond argues that the gaps in power and technology between human societies originate in environmental differences, which are amplified by various positive feedback loops. When cultural or genetic differences have favored Eurasians (for example, written language or the development among Eurasians of resistance to endemic diseases), he asserts that these advantages occurred because of the influence of geography on societies and cultures, and were not inherent in the Eurasian genomes.

Synopsis

The prologue opens with an account of Diamond's conversation with Yali, a New Guinean politician. The conversation turned to the obvious differences in power and technology between Yali's people and the Europeans who dominated the land for 200 years, differences that neither of them considered due to any genetic superiority of Europeans. Yali asked, using the local term "cargo" for inventions and manufactured

goods, "Why do white people have so much cargo, but we New Guineans have so little?" (p. 14)

Diamond realized the same question seemed to apply elsewhere: "People of Eurasian origin... dominate the world in wealth and power." Other peoples, after having thrown off colonial domination, still lag in wealth and power. Still others, he says, "have been decimated, subjugated, and in some cases even exterminated by European colonialists." (p. 15) The peoples of other continents (Sub-Saharan Africans, Native Americans, Aboriginal Australians and New Guineans, and the original inhabitants of tropical Southeast Asia) have been largely conquered, displaced and in some extreme cases – referring to Native Americans, Aboriginal Australians and South Africa's indigenous Khoisan peoples – largely exterminated by farm-based societies such as Eurasians and Bantu. He believes this is due to the societies' military and political advantages, stemming from the early rise of agriculture after the last Ice Age. He proposes explanations to account for such disproportionate distributions of power and achievements.

Title

The book's title is a reference to the means by which farm-based societies conquered populations of other areas and maintained dominance, despite sometimes being vastly out-numbered – superior weapons provided immediate military superiority (guns); Eurasian diseases weakened and reduced local populations, who had no immunity, making it easier to maintain control over them (germs), and centralized government promoted nationalism and powerful military organizations (steel). The book uses geography to show how Europeans developed such superior military technology, and how Europeans and Asians developed some immunity to diseases which spread among them, while epidemics of them devastated the indigenous populations in the Americas after European contact. Eurasia was the beneficiary of favourable geographic, climatic and environmental characteristics, particularly after the last Ice Age about 13,000-15,000 years ago.

The theory outlined

Diamond argues that Eurasian civilization is not so much a product of ingenuity, but of opportunity and necessity. That is, civilization is not created out of superior intelligence, but is the result of a chain of developments, each made possible by certain preconditions.

In our earliest societies, humans lived as hunter-gatherers. The first step towards civilization is the move from hunter-gatherer to agriculture, with the domestication and farming of wild crops and animals. Agricultural production leads to food

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surpluses, which supports sedentary societies, specialization of craft, rapid population growth, and specialization of labor. Large societies tend to develop ruling classes and supporting bureaucracies, which may lead in turn to the organization of nation states and empires.^[3]

Although agriculture arose in several parts of the world, Eurasia gained an early advantage due to the greater availability of suitable plant and animal species for domestication. In particular, Eurasia had the best collection of plants and animals suitable for domestication – barley, two varieties of wheat and three protein-rich pulses for food; flax for textiles; goats, sheep and cattle provided meat, leather, glue (by boiling the hooves and bones) and, in the case of sheep, wool. As early Middle Eastern civilizations began to trade, they found additional useful animals in adjacent territories, most notably horses and donkeys for use in transport.

In contrast, Native American farmers had to struggle to develop maize as a useful food from its probable wild ancestor, teosinte, but it provides few nutrients and must be planted one by one – an extremely cumbersome task. It should be noted that as they grew agricultural surpluses in (for example) the Mississippian culture about 1000 AD, they created more dense and specialized settlements. Eurasians had wheat and barley, which are high in fiber and nutrients and can be sown *en masse* with just a toss of the hand. They generated food surpluses which supported greater population growth. Such growth led to larger workforces and more inventors, artisans, etc. Grains can also be stored for longer periods of time unlike tropical crops such as bananas.

Eurasia as a whole domesticated 13 species of large animals (over 100 lb / 44 kg); South America just one (counting the llama and alpaca as breeds within the same species); the rest of the world none at all. Diamond describes the small number of domesticated species (14 out of 148 "candidates") as an instance of the Anna Karenina principle: many promising species have just one of several significant difficulties that prevent domestication.

Sub-Saharan Africans had mostly wild mammals, whereas Eurasians chanced to have the most docile large animals on the planet: horses and camels that are easily tamed for human transport; but their biological relatives zebras and onagers are untameable; and although Asian elephants can be tamed, it is very difficult to breed them in captivity;^{[3][4]} goats and sheep for hides, clothing, and cheese; cows for milk; bullocks for tilling fields and transport; and benign animals such as pigs and chickens. Africans, developing alongside large mammals, had available lions, leopards etc. Diamond points out that the only animals useful for human survival and purposes in New Guinea came from the East Asian mainland when they were transplanted during the Austronesian settlement some 4,000–5,000 years ago.

Eurasia's large landmass and long east-west distance increased these advantages. Its large area provided it with more plant and animal species suitable for domestication, and allowed its people to exchange both innovations and diseases. Its East-West orientation allowed breeds domesticated in one part of the continent to be used elsewhere through similarities in climate and the cycle of seasons. In contrast, Australia suffered from a lack of useful animals due to extinction, probably by human hunting, shortly after the end of the Pleistocene. The Americas had difficulty adapting crops domesticated at one latitude for use at other latitudes (and, in North America, adapting crops from one side of the Rocky Mountains to the other). Africa was fragmented by its extreme variations in climate from North to South: plants and animals that flourished in one area never reached other areas where they could have flourished, because they could not survive the intervening environment. Europe was the ultimate beneficiary of Eurasia's East-West orientation: in the first millennium BC, the Mediterranean areas of Europe adopted the Middle East's animals, plants, and agricultural techniques; in the first millennium AD, the rest of Europe followed suit.^{[3][4]}

The plentiful supply of food and the dense populations that it supported made division of labor possible. The rise of non-farming specialists such as craftsmen and scribes accelerated economic growth and technological progress. These economic and technological advantages eventually enabled Europeans to conquer the peoples of the other continents in recent centuries by using the "Guns" and "Steel" of the book's title.

Eurasia's dense populations, high levels of trade, and living in close proximity to livestock resulted in widespread transmission of diseases, including from animals to humans. Natural selection forced Eurasians to develop immunity to a wide range of pathogens. When Europeans made contact with America, European diseases (to which they had no immunity) ravaged the indigenous American population, rather than the other way around (the "trade" in diseases was a little more balanced in Africa and southern Asia: endemic malaria and yellow fever made these regions notorious as the "white man's grave";^[5] and syphilis may have spread in the opposite direction^[6]). The European diseases – the "Germs" of the book's title – decimated indigenous populations so that relatively small numbers of Europeans could maintain their dominance.^{[3][4]}

Guns, Germs, and Steel also offers a very brief explanation of why western European societies, rather than other powers such as China, have been the dominant colonizers.^[3]

- Other advanced cultures developed in areas whose geography was conducive to large, monolithic, isolated empires. In these conditions policies of

technological and social stagnation could persist – until Europeans arrived. China was a very notable example; in 1432, a new Emperor outlawed the building of ocean-going ships, in which China was the world leader at the time.

- Europe's geography favored balkanization into smaller, closer, nation-states, as its many natural barriers (mountains, rivers) provide defensible borders. As a result, governments that suppressed economic and technological progress soon corrected their mistakes or were out-competed relatively quickly. As an example of this national Darwinism, Diamond offers the disappearance of the counter-progressive Polish regime. He argues that geographical factors created the conditions for more rapid internal superpower change (Spain succeeded by France and then by England) than was possible elsewhere in Eurasia.

Diamond examined European dominance in more detail with further examples in a later article.^[7]

Intellectual background

Diamond was not the first to argue that environmental factors had a decisive influence on human history. In the late 1850s Henry Thomas Buckle sought to discover laws that governed history, and wrote that favorable climate and soils, and the plentiful food they produced, were important contributors to a population's accumulation of wealth. He believed that freedom from natural disasters such as earthquakes and floods made people less prone to superstition and therefore more likely to make rapid intellectual progress.

In the 1930s, the Annales School in France undertook the study of long-term historical structures by using a synthesis of geography, history, and sociology. Scholars examined the impact of geography, climate and land use. Although geography had been nearly eliminated as an academic discipline in the USA after the 1960s, several geographically-based historical theories were published in the 1990s. In addition, environmental history has arisen as a field taking account of man's activities in nature.

Guns, Germs and Steel met with a wide range of response, ranging from generally favorable to rejection of its approach. In 1998 it won the Pulitzer Prize for General Non-Fiction, in recognition of its powerful synthesis of many disciplines, and the Royal Society's Rhône-Poulenc Prize for Science Books.^{[10][11]} The National Geographic Society produced a documentary by the same title based on the book, and it was broadcast on PBS in July 2005.^[1]

Criticism

Some critics^[who?] of the book argue that it is derivative of the work of such cultural evolutionists as Leslie White, Julian Steward, and Ester Boserup, who analyzed the relationship between agriculture, economic and political growth; and such historians as William McNeill and Alfred Crosby, who analyzed the relationship between agriculture, European expansion, and disease.

Criticism can be grouped into three main lines of reasoning, as follows:

Eurocentrist determinism

In his last book published in 2000, the anthropologist and geographer James Morris Blaut criticized *Guns, Germs, and Steel* for reviving the theory of environmental determinism, and described Diamond as an example of a modern Eurocentric historian.^[12] Blaut criticizes Diamond's loose use of the terms "Eurasia" and "innovative", which he believes misleads the reader into presuming that Western Europe is responsible for technological inventions that arose in the Middle East and Asia. Blaut states that Diamond ignored or underestimated the nutritional value of several staple crops that grow naturally outside the temperate parts of Eurasia, overestimated the difficulty of adapting crops to new conditions by selective breeding, and ignored the separation of agriculturally productive regions within Eurasia's temperate belt by deserts and mountains.^[13] Blaut noted examples of North-South diffusion of crops in the Western Hemisphere, most significantly the cultivation of maize in Peru and its adoption in North America. He stated that in Europe, the major economic and technological developments of the last 500–600 years took place in Northern and Western Europe; as the area is generally flat, this weakens Diamond's suggestion that Europeans benefited by competition among societies that developed separately due to geographic barriers, such as mountains.

Political factors

Military historian and conservative political columnist Victor Davis Hanson agrees with Diamond in that he rejects a racial explanation for Western dominance. But Hanson argues that certain fundamental aspects of Western culture are responsible, specifically political freedom, capitalism, individualism, republicanism, rationalism, and open debate. Hanson has written that Diamond seems "terribly confused" about history, and that environment was "almost irrelevant" to Western success. Supporters of Diamond, however, have argued that these cultural aspects were created because of the environment and resources at Europe's disposal. In fact, Diamond specifically cites the evolution of complex socio-political structures as a yield of the increased resources and environment which benefited western Europeans.^[14]

Clifford Pickover pointed out that in the 15th century, the Turks closed lucrative trade routes between the Orient and Europe. Merchants responded by developing new routes, primarily by sea, to restore trade with the Orient. This process accelerated the development of cartographic and navigational technologies, which allowed Europeans to dominate the globe in less than a century.^[15]

Weaknesses in arguments

In a review of *Guns, Germs, and Steel* that ultimately commended the book, historian Professor Tom Tomlinson wrote that, "Given the magnitude of the task he has set himself, it is inevitable that Professor Diamond uses very broad brush-strokes to fill in his argument," but regarded Diamond's sketchy coverage of social, political and intellectual history (a handful of pages), especially in the last 500 years, as a notable weakness. He stated that Diamond's approach ignored "much of the current literature on cultural interactions in modern history" and Diamond omitted "almost all of the standard literature on the history of imperialism and post-colonialism, world-systems, underdevelopment or socio-economic change over the last five hundred years." Tomlinson also stated that, "The European empires of conquest in Asia, especially those of the British in India and the Dutch in Java, were not based on clear technological superiority in armaments, nor on the spread of disease."^[16]

Another historian, Professor J. R. McNeill, was on the whole complimentary but thought Diamond oversold geography as an explanation for history, noting several exceptions and inconsistencies. McNeill also faults Diamond for underemphasizing cultural autonomy.^{[4][17]}

Responses to criticism

Anticipation of criticism

Before stating his main argument, Diamond considers three possible criticisms of his investigation (page 17):

"If we succeed in explaining how some people came to dominate other people, may this not seem to justify the domination? Doesn't it seem to say that the outcome was inevitable, and that it would therefore be futile to try to change the outcome today?"

His answer is that this is a confusion of an explanation of causes with a justification of the results. "[Psychologists, social historians, and physicians] do not seek to justify murder, rape, genocide, and illness." Rather, they investigate causes to be able to stop the results.

Doesn't addressing the question "automatically involve a Eurocentric approach to history, a glorification of Europeans ..."?

But, according to Diamond, "most of this book will deal with peoples other than Europeans." It will, he says, describe interactions between non-European peoples. "Far from glorifying peoples of European origin, we shall see that the most basic elements of their civilization were developed by peoples living elsewhere and were then imported to Europe." And Diamond specifically and repeatedly states that the advantages that Eurasians had in development were primarily due to a fortuitous mixture of climate, crops, and animals, and not due to any inherent advantages of the people themselves. Given time (without exposure to Eurasian culture), he posits that other societies would have eventually made the same technological leaps, they just didn't get to the starting line at the same time due to the above factors.

"Don't words such as 'civilization,' and phrases such as 'rise of civilization,' convey the false impression that civilization is good, tribal hunter-gatherers are miserable, ...?"

On the contrary, according to Diamond, civilization is a thoroughly mixed blessing, in ways that he describes. In addition any preconceived semantic boundaries of the words 'civilization' and the spatial to mental apprehension of the meaning 'rise' will all be individually encountered. The word "rise" in the sense used in the question does not warrant the assumption that it is "positive" but only representing the subject, civilization, coming into existence; that is to say "arise".

Response to criticism of Eurocentrism and determinism

In *Guns, Germs and Steel*, Diamond frequently anticipates some of the criticism received. In the third sentence of the prologue, he notes that "the literate societies with metal tools have conquered or exterminated the other societies." But he almost immediately says that most accounts of world history focus too much on Eurasia, too much on western Eurasia and too much on the tiny fraction of human history that follows the invention of writing. In particular, he says, "a history focused on Western Eurasian societies completely bypasses the obvious big question. Why were those societies the first that became disproportionately powerful and innovative? ... Why did those ingredients of conquest arise in western Eurasia, and arise elsewhere only to a lesser degree or not at all? ... Why didn't capitalism flourish in Native Mexico, mercantilism in Sub-Saharan Africa, scientific enquiry in China, ... and nasty germs in Aboriginal Australia?"

Later in the book Diamond briefly examines why some of the "founder" civilizations that discovered agriculture, and became specialized and urbanized did not become dominant on a world scale. He says, for example, that Southwest Asia's intense agriculture damaged the environment, encouraged desertification, and hurt soil fertility. He argues that because central China has fewer geographical barriers (i.e. mountain ranges or bodies of water) than Europe, China was unified relatively early in its history (see Qin Dynasty). He suggested that political homogeneity led to stagnation, particularly because there were no external competitors that might have forced the nation to reverse mistaken policies. As the book is mostly concerned with developments from prehistory up to about AD 1500, it understandably does not dwell on colonialism, post-colonialism, or other developments in the modern period. Furthermore, Diamond argues that *Eurasia* (as opposed to Europe alone) would inevitably be dominant.

In a later article, Diamond notes that circa 1500, during the Ming Dynasty, China's naval superiority over what Europeans could field was terminated by a single political decision, the hai jin ("ocean forbidden"); in a Europe fragmented into hundreds of kingdoms and nation-states, no such authority existed. Similarly Japan learned about guns from Portuguese explorers in 1543 and by 1600 had the world's best guns; but as these threatened the power of the Samurai class, it restricted and finally banned their production. Diamond concludes that such bans could be imposed only in politically unified and isolated nations, such as Japan under the Tokugawa shogunate. He also says that India, on the other hand, may have been too fragmented for a monumental rise in power similar to Europe's.^[7]

Diamond has answered the critique of historical counterexamples (in differing growth rates unrelated to material endowments) by claiming that these cases represent short-term growth over (at most) fifty-year time windows. In the case of rapidly expanding economies (such as the "East Asian Tigers"), the rapid growth is usually explained (in economics) as one country "catching-up" to the rest (cf. endogenous growth theory), through trade and technological transfer (which would have been difficult between continents in the pre-1500 period on which the book concentrates.) Instances of civilizations' stagnating or being conquered despite having access to resources superior to their neighbors are mentioned several times in this book; in Diamond's view, such reversals of fortune support his thesis, as they provide a mechanism for the spread of cultural dynamism and technology within continents but not, until the "Age of Exploration", between them. (His later work, Collapase, tied environment and the fate of individual civilizations together more closely, but in *Guns, Germs, and Steel* his argument is made at the continental level, rather than the level of specific societies.)

Diamond's view is largely "deterministic", in that *Guns, Germs and Steel* argues that Eurasian dominance was inevitable, or at least very likely (sometimes called geographical determinism). Although Diamond later cites the effects of specific decisions by governments, he suggests that geographical isolation was what made their effects so long-lasting (for example Ming China's ban on ocean-going ships). Nevertheless, Diamond explicitly asks (on page 17) whether this inevitability would "justify the domination", and whether it renders futile modern attempts to "change the outcome." He denies that it does. Today the effects of proven environmental determinism can be easily nullified by contemporary transport and communication. The effects of racial determinism might be used to justify genocide, but such racial determinism has not been proven.

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Appendix III. Reading 1. Diamond: Guns, Germs & Steel

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