

Daniel Headrick, *Technology: A World History* (Oxford: Oxford University Press, 2009), ISBN: 978019515648.

Part of the New Oxford World History series, Daniel Headrick's *Technology: A World History* seeks to provide a global history of technology. Since he anticipates that readers can easily access other volumes for information on the events he references in the text, the author has been allowed to pursue his ambitious topic without having to provide in depth background information. Typical of Headrick's work, the book is very well written and accessible to the general public while also being of significant value to the historian.

Headrick begins with a consideration of prehistoric technology, and the materials available for making tools many thousands of years ago. For the first chapter and a half he is able to draw examples from all over the world, as the technology level was essentially the same. This remained the case until the development of agriculture led some populations to settle in cities, such as Jericho in Palestine.

As cities became more common, agricultural surpluses allowed people to devote their energy to tasks other than food production. Thus, civilizations began to form. Headrick discusses this in Chapter Two, instituting a pattern that he follows for the remainder of the book: he discusses technological advances in China, India, the Middle East, Europe, and the Americas in parallel, moving among the various reasons with ease. He is always careful to account for differences in technology in these areas. Chapter Three covers the period from the beginning of the Iron Age, through the rise of the empires, to the age classically considered to mark the end of Antiquity.

Chapter Four covers the medieval period and Renaissance, devoting considerable space to the civilizations of the Middle East and China, as well as to Europe which was relatively technologically backward. In this chapter, Headrick also covers the early interactions between civilizations, including Marco Polo's contact with China and Christian scholars transmitting the knowledge of the Muslim world to Europe via Spain. However, the story of interactions between civilizations does not reach its full pace until Chapter Five.

Entitled 'An Age of Global Interactions', Chapter Five covers the major interactions between civilizations from 1300 to 1800, including the rise of the European colonial empires. This also includes an account of what was quite possibly the most important invention of the second millennium: the printing press. Chapter Six surveys the period classically considered as the Industrial Revolution, under the title 'The First Industrial Revolution'. In it Headrick considers the question of why China, which held significant technological advantages over the rest of the world for centuries, did not industrialize first. The answer he offers, in sum, is that China's great population meant that industrialization was not essential; government policy by the Ming dynasty had come to treat technology with suspicion and, perhaps most significantly, an efficient source of fuel was not readily available. With the process of industrialization, Europe left the rest of the world far behind and assumed a dominant position in world affairs.

Chapter Seven covers the period from 1869 to 1939, which witnessed significant technological developments. Most of these developments were, in one way or another, harnessed for military purposes by the 1940s, if not before. Chapter Eight, on the other hand, covers many developments, including nuclear technology, computers, and rockets, which were perfected for military purposes and later found to have significant applications in the civilian world. It is important to note that, as time progressed, the pace of technological change did not slow down. On the contrary, it has increased consistently since the late Stone Age.

Throughout the book, Headrick discusses technological developments in several major categories: food production/agriculture (for instance, irrigation and the moldboard plow); production/manufacturing (the spinning wheel and the assembly line); transportation/communication (the wheel and the telegraph), and warfare (stirrups and gunpowder); These areas are frequently interrelated, and some technological advances fit into multiple areas (iron, the horse collar, the airplane, etc.). These loose divisions between categories, and similarly interrelated discussions of technological advance in different geographic areas, help to shape the narrative.

Headrick's *Technology: A World History* is a valuable asset to historians and non-historians alike. It provides a very solid explanation of why the world of today has developed in the way that it has. Wisely, Headrick declines to draw broad conclusions about technological advances that have

occurred in the past half century. If a criticism of this excellent work can be made, it is that its scope is extremely broad and provides limited detail about most events; however, this is a topical rather than a general history, and it is a part of a series, as noted above. Headrick never loses sight of his goal: to provide a technological history of the world.

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