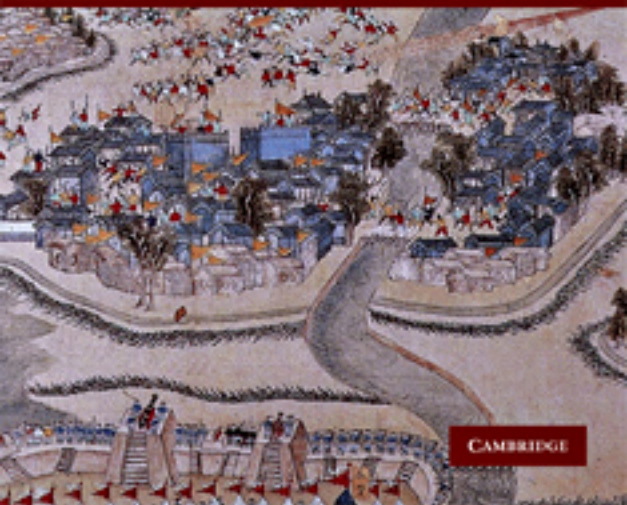


PETER A. LORGE

THE  
**Asian Military Revolution**  
From Gunpowder to the Bomb



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## The Asian Military Revolution

Records show that the Chinese invented gunpowder in the 800s. By the 1200s they had unleashed the first weapons of war upon their unsuspecting neighbors. How did they react? What were the effects of these first wars? This extraordinarily ambitious book traces the history of that invention and its impact on the surrounding Asian world – Korea, Japan, Southeast Asia and South Asia – from the ninth through the twentieth century. As the book makes clear, the spread of war and its technology had devastating consequences on the political and cultural fabric of those early societies although each reacted very differently. The book, which is packed with information about military strategy, interregional warfare, and the development of armaments, also engages with the major debates and challenges traditional thinking on Europe's contribution to military technology in Asia. Articulate and comprehensive, this book will be a welcome addition to the undergraduate classroom and to all those interested in Asian studies and military history.

PETER LORGE is Senior Lecturer in the Department of History at Vanderbilt University, Tennessee. His previous publications include *War, Politics and Society in Early Modern China* (2005) and *The International Reader in Military History: China Pre-1600* (2005).

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# The Asian Military Revolution

*From Gunpowder to the Bomb*

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Peter A. Lorge

*Vanderbilt University, Tennessee*



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Having stretched so far to write this book, I am acutely aware of my shortcomings. Despite the kindly and scholarly efforts of several people, many of my mistakes remain.

# Chronology

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808	First mention of a mixture retrospectively understood to be gun-powder
Late 9th century	First possible use of gunpowder in warfare
Mid-10th century	First representation of a fire-spear
960–1279	Song dynasty
Early 11th century	Introduction of explosive gunpowder bombs in China
1044	First direct description of gunpowder published in the <i>Complete Essentials from the Military Classics</i> ( <i>Wujing Zongyao</i> )
1127	Jurchen Jin capture the Song capital at Kaifeng
1132	First mention of a fire-spear, used at the siege of De'an
1221	First mention of iron-casing bombs, used during the Jurchen siege of Qizhou
Late 12th century	Invention of the rocket in China
1290	Earliest dated extant gun
13th century	Appearance of the true gun in China
1259	Koryo surrenders to Mongols
1274	First Mongol invasion of Japan
1281	Second Mongol invasion of Japan
1363	Battle of Lake Poyang
1368–1644	Ming dynasty
1400	Melaka established
1405–33	Zheng He's seven voyages
1467–77	Onin War
1511	Portuguese conquer Melaka
1526	First Battle of Panipat
1526–1857	Mughal empire
1543	Putative introduction of Portuguese firearms into Japan
1556	Second Battle of Panipat
1575	Battle of Nagashino

1592–3	First Japanese invasion of Korea
1593	Battle of Pyongyang
1597	Second Japanese invasion of Korea
1600	Battle of Sekigahara
1600–1867	Tokugawa Shogunate
1644	Shivaji sacks the Mughal port of Surat
1644–1911	Qing dynasty
1674	Shivaji has himself crowned king
1739	Nadir Shah invades the Mughal empire and captures Delhi
1757	Battle of Plassey
1782	Chakri dynasty established at Bangkok
1804	Qing court grants the name “Vietnam” to the ruler of Annam
1824	Myanmar conquers Assam
1824–6	First Anglo-Burmese War
1839–42	Opium War
1850–64	Taiping Rebellion
1852	Second Anglo-Burmese War
1857	Sepoy troops mutiny against their British officers
1868	Meiji Restoration
1876	Britain’s Queen Victoria assumes the title Empress of India
1885	Third Anglo-Burmese War
1894–5	Sino-Japanese War
1904–5	Russo-Japanese War

## Glossary

---

Arquebus	Term for a handgun originally derived from the early fifteenth-century word “ <i>hackenbüchse</i> ,” or hook gun.
<i>Ashigaru</i>	Lit. “light-foot.” Less heavily armored Japanese troops of the lowest martial class or commoners pressed into service.
<i>Atakebune</i>	A kind of early Japanese battleship-mounting cannon.
<i>Ban</i>	A South Asian rocket arrow.
Corning	A method of granulating gunpowder that affects its absorption of atmospheric water and its burn rate when ignited.
EIC	British East India Company.
Fire-arrow	Either an arrow packed with gunpowder and fired by a conventional bow in order set fire to a target, or a rocket, a projectile launched by the reactive force of ignited gunpowder.
Fire-ball	A container of low-nitrate gunpowder launched at a target to burn it.
Fire-spear	A spear with a tube filled with low-nitrate gunpowder affixed near its head.
Fire-tube	A tube filled with low-nitrate gunpowder.
<i>Firingi</i>	A South Asian field gun.
Gunpowder	A mixture of a nitrate (potassium, sodium, magnesium or calcium), sulfur, and charcoal.
<i>Huoyao</i>	Lit. “fire drug.” Chinese term for gunpowder.
<i>Jaza'il</i>	Originally a <i>shaturnal</i> modified to fire from atop a wall, it later evolved into a sort of sniper rifle.
<i>Mansab</i>	Imperial rank.
Musket	Originally the name for a heavier form of arquebus that came to encompass most long-barreled, but unrifled, handguns.
<i>Naginata</i>	A polearm with a long, curved blade.

Salt peter	Potassium, sodium, magnesium, or calcium nitrate.
<i>Shaturnal</i>	Light swivel gun mounted atop a camel or elephant.
<i>Trace italienne</i>	“Italian plan”; a form of gunpowder fortification pioneered in Italy, where it was known as “ <i>Alla moderna</i> ” or “modern plan.”
<i>Tufang</i>	South Asian handgun.
<i>Wokou</i>	Also “wakou”; originally Japanese pirates who raided Korea and southern China. Over time these pirates included large numbers of Chinese.
<i>Wujing Zongyao</i>	<i>Complete Essentials from the Military Classics</i> , completed in 1044. A military encyclopedia that first recorded the recipe for producing gunpowder for military purposes.
<i>Yari</i>	A Japanese spear.
<i>Zamīndārs</i>	Local landlords or powerholders.
<i>Zarb-zan</i>	A South Asian field gun.



# Introduction

---

There seems little doubt that the composition of gunpowder has been known in the East from times of dimmest antiquity. The Chinese and Hindus contemporary with Moses are thought to have known of even the more recondite properties of the compound . . .

Gunpowder has been known in India and China far beyond all periods of investigation; and if this account be considered true, it is very possible that Alexander the Great did absolutely meet with fire-weapons in India . . .<sup>1</sup>

Early modern warfare was invented in China during the twelfth and thirteenth centuries. It was during those two centuries of brutal warfare between the Chinese Song dynasty, the Jurchen Jin dynasty, and the rising power of the Mongols that guns, grenades, rockets, and other incendiary weapons fueled by gunpowder became regular and widespread tools of war.<sup>2</sup> These weapons were used extensively in siege and naval warfare by vast armies and navies, and gradually moved on to the open battlefield. Chinese soldiers were recruited, trained, and armed by the government, and organized into regularly ordered military units supplied by a bureaucratic logistics system, as indeed they had been for more than a thousand years. These troops were even housed in barracks and provided with regular medical care. The major sieges of the time revolved around cities with relatively low, thick walls, almost impenetrable to missiles, with circumferences measured in miles. True guns developed in this environment, and subsequently spread to the rest of Asia and the world.

<sup>1</sup> W. W. Greener, *The Gun and its Development*, Guilford, CT: Lyons Press, 2002 (reprint of the 9th edn published 1910; 1st edn 1881), 13.

<sup>2</sup> Joseph Needham slipped in including the eleventh century in his “real proving-grounds” for the wide military use of gunpowder, since war with the Jurchen did not begin until after 1125. See Joseph Needham, *Science and Civilization in China*, Vol. V, part 7: *Military Technology: The Gunpowder Epic*, Cambridge: Cambridge University Press, 1986, 16. My point here is more specific to the invention of early modern warfare as a whole, rather than simply gunpowder’s regular use in warfare. The latter began in at least the eleventh century.

The French king Charles VIII led the first “modern” European army, invading Italy in 1494 with a force of infantry, cavalry, and gunpowder artillery, all paid from his treasury, thus ending the medieval warfare of the knights. Between this early period and the Revolutionary wars of Napoleonic France that ushered in national armies, Europeans adopted the articulated army units of Classical Rome, developed centralized state bureaucracies to supply those armies, and fortified major cities with low, thick walls able to withstand cannon. In Europe, at least, the association of modernity with guns is clear, though the precise relationship is still the subject of debate.<sup>3</sup> In China, as Geoffrey Parker noted, all of these elements, minus guns, existed before the Qin dynasty (221–206 BCE), and for him constituted a military revolution.<sup>4</sup>

Gunpowder played an important role in Asian history. This simple fact has usually been downplayed in Western scholarship on Asia, if not entirely denied, because the modern perspective on Asian history is that, before the arrival of Europeans, Asian military practice as a whole, and military technology in particular, was primitive and backward. European military superiority in the nineteenth century, at least with respect to technology, training, and tactics, led to an assumption that Asians had fallen behind because they were culturally non-military and racially inferior. Although the explicit racial argument has disappeared from recent Western scholarship, the cultural argument remains.

The cultural explanation of Asian technological inferiority is as pernicious as the racial explanation, since it denies Asia a military and political history before the arrival of the West. Technology is often portrayed as an objective measure of development, and its advancement as something that can be examined outside of politics. But the history of technology, particularly military technology, has been deeply inflected by nationalist sentiment. Early modern European superiority convinced many observers that Asian rulers had neglected military technology. Historians like Joseph Needham, who had done so much to establish China’s primacy

<sup>3</sup> Michael Howard, *War in European History*, Oxford: Oxford University Press, 1976, 19–20, and Gunther E. Rothenburg, “Maurice of Nassau, Gustavus Adolphus, Raimondo Montecuccoli, and the ‘Military Revolution’ of the Seventeenth Century,” in Peter Paret (ed.), *Makers of Modern Strategy*, Princeton: Princeton University Press, 1986, 32–63.

<sup>4</sup> Geoffrey Parker, *The Military Revolution: Military Innovation and the Rise of the West, 1500–1800*, 2nd edn, Cambridge: Cambridge University Press, 1996, 7.





Map 1 Asia

in inventing gunpowder and cannon, felt they had to explain why a people who had been so precocious in technology fell so far behind. They argued that Asian regimes, with the possible exception of Japan, either did not value technology or were less militarily oriented than Europeans. This book will demonstrate that all major Asian regimes valued military

technology and none was quantifiably less oriented to military affairs than were the Europeans.

### **The Military Revolution debate**

One of the most productive scholarly debates within the field of military history is the “Military Revolution debate.” The reactions to this ongoing discussion are sufficiently varied that it would be hazardous and unfair to describe any sort of general consensus held by the majority of scholars. Some scholars certainly feel that the question has been resolved one way or the other, but it is possible (and instructive) to adumbrate the arguments and counterarguments without taking sides. Fundamentally, the importance of the thesis and the ensuing debate rests on the connection between changes in warfare and changes in government and society, and upon whether the introduction of a particular technology produces only a specific response to it.

Michael Roberts first proposed the idea that there was a Military Revolution in Europe between 1560 and 1660 in a 1956 article, “The Military Revolution, 1560–1660.”<sup>5</sup> Maurice of Nassau and Gustavus Adolphus shifted their shot-armed infantry to linear formations and required their cavalry to charge the enemy aggressively. These changes led ultimately to the early modern nation-state through the bureaucratic and structural needs of the army. A centralized bureaucracy was required to provide the standing army, now extensively trained and disciplined, with uniforms and weapons. The strategy that grew out of these tactical changes and the trajectory of the Thirty Years War dramatically increased the size of the army.

With the increased army size came much heavier demands on the populace in terms of men, material, and money. The apparatus of the state developed to deliver these goods to the army, along the way creating techniques of management and new institutions within the government. All of this enhanced the power of the state itself. Roberts’ thesis provided a direct connection between the military, and the political and social changes that led to the modern state, thus making military history relevant to historians in other subdisciplines.

<sup>5</sup> Michael Roberts, “The Military Revolution, 1560–1660,” originally delivered as his 1955 inaugural lecture at Queen’s University Belfast. Initial publication as a pamphlet *The Military Revolution, 1560–1660* (Belfast: Marjarie Bajd, 1956), then reprinted with revisions in Roberts’ *Essays in Swedish History* (1967).

Geoffrey Parker adopted and expanded Roberts' thesis, both chronologically and technically, by taking the period 1530–1710 as the time of revolutionary change.<sup>6</sup> For Parker, the introduction of the *trace italienne* (Italian plan) fortifications made battles irrelevant and sieges long and difficult.<sup>7</sup> The *trace italienne* fortification was built with low and thick walls to protect it against cannon, and angled bastions to provide defending cannon overlapping fields of fire to prevent enemy troops from approaching. These new fortifications were also larger, requiring more money and troops to create and maintain, and forced besieging forces to grow as well. Where Roberts' revolution emphasized changes in drill and tactics, Parker emphasized the changes caused by technology. Gunpowder and cannons revolutionized warfare in Europe and, because of the economic, political, and social demands of that revolution, changed the European states themselves.

Parker's thesis has been attacked on a number of grounds, only two of which concern us here.<sup>8</sup> Some scholars have argued that political factors rather than technological ones were the cause of changes in warfare. This is a critical chicken-and-egg problem, and one that this study directly engages. In Asia, at least, it was political conditions that made the use of guns possible. The second objection relates to the necessary effects of the new technology. Did the technological changes necessitate growth in army size, change in government operations, and so on, or did changes in other areas cause those changes without particular respect to the technology? Certainly in Asia, technology was not a driver of change, but an indicator. These two problems obviously overlap. The first, however, concerns the political and social influence on warfare, and whether governments and societies fashion modes of warfare in response to real or perceived threats and cultural inclinations, or whether modes of warfare are determined by technology, with governments and society forced to accommodate them. The second problem is more technical, and confronts the issue of whether a specific technology requires a specific response. John Lynn, for example, demonstrated that *trace italienne*

<sup>6</sup> Geoffrey Parker, *The Military Revolution: Military Innovation and the Rise of the West, 1500–1800*, 2nd edn, Cambridge: Cambridge University Press, 1996.

<sup>7</sup> I use the italicized Italian term "*trace italienne*" rather than the simple translation "Italian plan" throughout to be consistent with scholarly convention. In Italy this kind of fortification was called "*alla moderna*" or "modern" plan. Some scholars now use the term "artillery fortress" both to indicate that it was a phenomenon whose development was not restricted to Italy and to emphasize the reliance upon artillery for the defense of the structures.

<sup>8</sup> These responses have been published in Clifford Rogers (ed.), *The Military Revolution Debate: Readings on the Military Transformation of Early Modern Europe*, Boulder: Westview Press, 1995.

fortifications did not require the vast increases in army size that Parker claimed they did.<sup>9</sup>

In contrast to early modern Europe, at least as Roberts and Parker have described it, there were a variety of responses to guns in Asia. This was true both before and after Europeans reached Asia. In some cases guns were paired effectively with cavalry, as the Mughals did, and in others they enhanced the infantry to the point of nearly rendering the cavalry obsolete, as in Japan. European historians have often, though not unanimously, assumed that European modern warfare was the one true path, a system that developed logically and inevitably from the nature of the advancing technology of guns. Since Europeans by their own definition were the most rational and logical of people, their mode of warfare was also the most rational and logical. Those who did not adopt it after seeing it were being deliberately irrational, or lacked the ability to advance their polity to the point where it could follow it. Yet European warfare in Asia was often highly unprofitable, involving vast expenditures to build and maintain *trace italienne* fortifications and colonial administrations that only profited a small number of merchants (while immiserating native populations and undermining local cultures). European imperialism as a whole was only rational for the narrow group of elites who were able to use the resources of their states to profit themselves economically and politically. Competition for glory among European nations led to political and ideological traditions that supported unprofitable military adventures around the world. Warfare in Asia did not materially benefit most Europeans, however, and may well have actually hurt them in the form of higher taxes, and resources diverted from domestic uses to foreign adventures.

Clifford Rogers has suggested that: “Henceforth it would be clear that the consequences of military innovation in early modern Europe belonged at least as much to World as to European History.”<sup>10</sup> Rogers did not, presumably, intend to imply by this statement that it was only European developments in guns and their use in warfare that created a truly transformative revolution in world history. It is only that his frame of reference looks forward from early modern Europe for the roots of the modern world. Pulling the narrative framework back a little chronologically, it would be equally accurate to say that henceforth it would be clear

<sup>9</sup> John Lynn, “The *Trace Italienne* and the Growth of Armies: The French Case,” in Rogers, *The Military Revolution Debate*, 169–99. But see Parker’s response to Lynn in Parker, *The Military Revolution*, 169–71.

<sup>10</sup> Clifford Rogers, “The Military Revolution in History and Historiography,” in Rogers, *The Military Revolution Debate*, 5.