AN UNFINISHED REVOLUTION:
BABUR, AKBAR AND THE RISE OF
MUGHAL MILITARY POWER

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ABSTRACT

Many historians have argued that European colonization of India and other parts of the world was facilitated by a so-called “Military Revolution.” Between the 14th and 18th centuries a series of innovations in military technology and organization reshaped not only the conduct of warfare but also the whole of European society. Rising Western powers designed new tools of war, commerce and statecraft in their constant conflicts with each other—and then used them to impose their will on the rest of the world. Yet this process was not unique. During this time the Mughal Empire also emerged as one of the wealthiest and most powerful states on the planet. It controlled almost all of South Asia and fielded vast armies equipped with weapons that were modern even by European standards. Its success was the product of remarkable advances in technology, tactics and organization promoted by the great Emperors Babur and Akbar. This Indian military revolution paralleled many of the early developments of its Western counterpart. Ironically it was the overwhelming dominance of the Mughals that caused the revolution to remain unfinished. There were no remaining enemies powerful enough to demand continued excellence and innovation—and no successors strong enough to halt European expansion into the vacuum left by the Empire’s eventual decline and fall.
Dedicated to both of my families.
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CHAPTER 1

INTRODUCTION

During the middle part of the 18th century the soldiers of the British East India Company began to dismember what remained of the Mughal Empire. In a series of battles they defeated the chieftains who had arisen to rule its various provinces—warlords whose allegiance to the Emperor was more theoretical than factual. Time and again small forces of Europeans and European-trained Indians triumphed over seemingly impossible odds, routing vastly larger native armies. In 1757, at Plassey, a British contingent of 3,000 defeated the Nawab of Bengal’s horde of over 50,000 in an engagement that at times seemed closer to low comedy than legendary battle. Historian Lawrence James describes some of the mayhem that ensued.

[The Bengalis] had massive twenty-four and thirty-two pounder pieces, each mounted on platforms dragged by forty or fifty yoke of bullocks and nudged into position by elephants. Their transport proved the gunners’ undoing, for three elephants were killed and the rest became unruly. The oxen, too, were terrified by the fire and stampeded, taking their drivers with them. If this was not enough... the Indian gunners seemed clumsy and once accidentally set alight their own powder barrels, which exploded and added to the pandemonium.¹

This pattern of British competence and native ineptitude would be repeated in a number of later engagements. In many instances the resistance was half-hearted or British agents suborned key enemy commanders. Yet even the
bravest opponents were unable to match the Company’s combination of “iron discipline; the steadiness of its men, both Indian and European, in defence; and their ferocity when the moment came for a counter-attack.”  

2 The eventual Western domination of India appeared to be inevitable. Many British observers were puzzled by the Indians’ failings and sought theories to explain them. Some argued that Indians were unsuited by nature or temperament to be soldiers. Such assertions had a limited appeal in an era before the rise of scientific racism. Furthermore, they were disproved by clearly observable fact— as sepoys in Company service, Indians could become formidable soldiers indeed. Others searched for flaws in Indian culture. While India was reckoned to be great civilization dating back to Classical times—few made the mistake of labeling Indians as “savages” as was done with Native Americans or black Africans—there was some sense that the country had entered a long period of decline and decadence. As one self-appointed expert quipped, India had remained “for a thousand years in the same state of mediocrity.”  

3 Modern historians have since revisited this issue. Most of them argue that the emergence of Western supremacy—in India and around the world—was due more to European exceptionalism than native inadequacy. Over time the theory of the “Military Revolution” emerged, advanced by C.W.C. Oman, Michael Roberts, Geoffrey Parker and others. The timeframe and specifics vary from author to author, but the basic principles remain the same. In the period between the 14th and 18th centuries a series of innovations in military technology and organization reshaped not only the conduct of warfare but also the whole of
European society. These changes included the introduction of more lethal missile weapons—especially those powered by gunpowder—and the resulting rise of infantry as a decisive force. There was also a new science of organization at all levels, from drill and small unit tactics to logistics and grand strategy. The management of such sophisticated machinery and complex systems demanded standardization and extensive training—the emergence of a truly professional military class. The human and economic costs of maintaining these new model armies led to the development of more advanced methods of civil administration and social control—the elements required to create truly centralized modern states. Order led to prosperity as unified nations created more efficient systems of industry and trade. Emerging European powers refined their tools of war, commerce and statecraft in their conflicts with each other—and then used them to impose their will on the rest of the world.

Yet neither colonial perceptions of Indian decadence or present day theories of European sophistication can explain away certain facts. Less than a century before Plassey the Mughal Empire was one of the most powerful states on the planet. It controlled almost all of South Asia—from the Punjab to the borders of Burma, from Afghanistan to the Malabar Coast. Its Emperor could summon field armies of 200,000 or more equipped with weapons that were modern even by European standards. 4 Mughal power also extended beyond the military realm. The Empire also commanded a vast army of bureaucrats, tax collectors, artisans and bankers. The Mughals maintained a positive balance of
trade with Europe and the rest of the world. In the 17th century, it was the British East India Company that existed at the sufferance of the Emperor.

It would appear that such success was the outcome of considerable foresight and innovation, but the achievements of the Mughals are discounted by some Western historians. They argue that, if anything, India experienced a military revolution in a minor key. William H. McNeill explains this position most eloquently with his theory of "Gunpowder Empires." He asserts that while Asian empires such as the Mughals, Safavids and Ottomans achieved a superficial technological parity with Western states, they never completely integrated these inventions into their military and political systems. Firearms and other modern gadgets were simply used as supplements and force multipliers for decidedly old-fashioned armies and administrations. While such a limited application of technology allowed these states to attain regional supremacy, their long-term futures were not bright. They would be no match for European powers that had constructed new societies to go along with their new machines.

Just how advanced was the Mughal Empire in comparison to its European contemporaries? Did it bring a true "Military Revolution" to India? Was its decline—and the ensuing Western domination of India—really inevitable? One way to address these questions is to go back to the beginning—to examine just how the Empire was created and how it would change the nature of war in India. Such an exploration will inevitably focus on two figures—Babur, the founder of the Empire and its first Emperor and Akbar, the ruler who greatly expanded both the physical borders and the intellectual frontiers of the Mughal state. They
successfully integrated a number of new and existing elements into a military machine that would in fact revolutionize warfare in South Asia. Their combination of technology, tactics, strategy and organization would be built upon by their successors, changing not just how Indians fought and died, but how they lived—how they acted both as subjects and as rulers.
CHAPTER 2

BABUR: A NEW WAY OF WAR

Zahiruddin Muhammad Babur was born into Central Asian royalty. His lineage was especially exalted—he was a direct descendant of the great conquerors Chingiz Khan and Timur. As a child Babur inherited the throne of the small principality of Ferghana, located in present-day Uzbekistan. However the precocious prince had greater ambitions. He hoped to win control of Samarqand, one of Central Asia's greatest cities and the former capital of the mighty Timur. He launched his first attack on that city at the tender age of 12. Babur would eventually capture—and lose—Samarqand three times over. His dreams of a Central Asian empire were never realized. Instead his fortunes fluctuated wildly. At various times he was a head of state, a soldier of fortune or a glorified bandit chieftain. Later in life he claimed a new kingdom in Afghanistan, centered on the city of Kabul. This would serve as the base for his invasion of India in 1526—the campaign that would lead to his greatest triumphs. Fortunately the ups and downs of Babur's career are very well documented—by his own hand. Near the end of his life he wrote a memoir, later known as the Baburnama, which would become one of the first published autobiographies in the Islamic world.
The Baburnama reveals much about its author's character and personality. The most obvious trait is Babur's intelligence—his active, inquisitive mind. Babur took great notice of the world around him. Much of his memoir is devoted to the exotic customs and natural wonders of the places that he visited. His curiosity and attention to detail are evident in his description of a curious species of Indian deer and its uses:

People use the kalhara to catch other deer. They fasten a trap ring to the kalhara's antlers, then tie a large stone to its leg at the ankle, which prevents it from going far after it has snared a stag. When they have spotted a stag to be caught, they put the kalhara opposite it. The stag, being quite pugnacious, immediately begins to do battle. The animals clash, lock antlers and go back and forth, during which the stag's antlers become snared in the ring... If the wild stag wants to escape, the tame one cannot go far because the stone is tied to its leg. In this way many stags are caught and then tamed to catch still more deer. 6

Such activities would be fascinating to Babur. He was deeply interested in how devices and systems worked, in finding clever solutions to problems. He was always ready to experiment and take risks. Babur was willing to take even greater risks on the battlefield. He was brave to the point of recklessness, leading his troops from the front and suffering several serious wounds in battle. At times he was as impulsive as he was courageous. This was especially true early in his career, when his plans of attack were equally likely to end in triumph or disaster. Babur was a pitiless enemy, but he was also nurturing friend. He remained loyal to his comrades and followers and was usually willing to forgive their mistakes. While he was ruthless in battle, he often granted mercy to defeated rivals. He had a keen understanding of human frailty—both in himself and others.
Despite this wealth of insight, the Baburnama is far from a perfect document. There are a number of important omissions—both accidental and intentional. Sizeable portions of the text were left unfinished or lost outright. The most troublesome of these gaps covers an 11-year period from 1508 to 1519. It was during this time that Babur and his army obtained an arsenal of firearms and retained the foreign advisors who would instruct them in their use. These were crucial years for the evolution of Babur's tactics and strategy and his growth as a commander—from brash boy general to future Emperor. Babur presumably intended his memoirs for an audience of his peers—Central Asian warriors and noblemen like himself. Therefore he leaves much unsaid, assuming the reader's familiarity with military matters. His accounts of battles and campaigns tend to be brief and rather basic. They often omit important information such as detailed orders of battle, the ratio of infantry to cavalry or the type of weapons and equipment used by his troops. The number of combatants involved on either side is not always stated—and the numbers may be exaggerated or imprecise when they are provided. Babur does expound at greater length on items that he assumes are unfamiliar to his readers, such as the flora and fauna of India or the odd habits of its natives. This pattern extends to his military narratives. Fortunately the elements of his army that he explains in the greatest detail are those that he sees as new and distinctive—such as his use of gunpowder or wagon tactics.
Babur does make it clear that cavalry—primarily horse archers on the traditional steppe model—remained a central element in his army both before and after the conversion to gunpowder. Cavalry of this type was prevalent both in Central Asia and in India, which had been dominated for centuries by a series of Turkish Muslim dynasties. When in the field with his troops, Babur himself fought as a mounted archer. He and his men used recurved composite bows, made with alternating layers of horn, wood and sinew. These weapons were accurate at over 100 yards and still dangerous at ranges in excess of 200 yards. As sidearms they typically carried swords although Babur and others do make note of somewhat more exotic weapons like battle-axes, maces and flails. Protective gear usually consisted of a shield, helmet and hauberk. Most body armor was in the form of chain mail—Babur often referred to armor by the generic expression “mail”—but wealthier and better-outfitted troopers might use half plate or lamellar armor. The best equipped of them also had protective coverings for their horses. The most heavily armored soldiers were probably organized into units of heavy cavalry that used lances in addition to swords and were more capable of delivering shock attacks.

Cavalry performed a number of crucial roles—scouting, screening, skirmishing, flanking, encircling and pursuing an enemy and exploiting breakthroughs. As vital as cavalry was, many experts still overstate its importance to Babur’s cause. In his treatise Mughal Warfare, Jos Gommans argues for the supremacy of the cavalryman and the relative insignificance of the
infantryman. “Without his horse the Mughal soldier was a penniless as well as honourless figure. Besides, on numerous occasions the Mughal horse trooper had proven his superiority over numberless footsloggers.” G.J. Bryant describes how Babur “burst through the Hindu Kush with his trim, fleet cavalry army and swept all before him in Northern India,” forgetting that the major battles of that campaign were contests of position in which defense was to prove its supremacy. Much of the Mughals’ defensive excellence was based on their infantry. Babur’s account makes it clear that infantry was an important part of his force from the beginning. While the legions of Chingiz Khan and Timur were composed almost entirely of cavalry, the Central Asian armies of the 16th century—under the control of rulers who had become increasingly sedentary—fielded larger numbers of infantrymen. Babur mentions their presence in both his own ranks and those of his enemies—Turks, Uzbeks, Afghans and Indians. Cavalry still ruled the steppes, but not all battles took place in the open field. Babur fought many engagements under adverse conditions—during sieges, inside cities with street fighting and house-to-house combat, in mountains with rugged terrain and deep snow, during bad weather—where cavalry would struggle. He notes the importance of fighting on foot in all of these circumstances.

Unfortunately Babur does not explain the composition of his infantry force in any great detail. Many of them were clearly irregulars raised at a moment of crisis or opportunity. Babur relates how he encouraged the “rabble” of Samarkand to rise up and fight on his side during his first occupation of that city.
He later describes a detachment of peasant volunteers. "There must have been between two and three hundred men, mostly on foot, with clubs in their hands, rough boots on their feet, and shepherd's cloaks on their backs." Obviously such troops—poorly equipped and even more poorly trained—were of limited utility. They were usually sent home the moment they were no longer needed. In many other instances the "infantry" were obviously dismounted cavalry, fighting in sieges or other close quarters where their horses were of no use. However there were also contingents of regulars. The most important of these were the musketeers, but the use of regular infantry predated the conversion to gunpowder. In certain instances Babur refers to separate units of musketeers and traditional style infantry. While infantrymen presumably occupied a lower place on the social scale than their fellows in the cavalry, that place was not without honor. Babur refers to a trusted officer named Dost Sarpuli, "a foot soldier who had been promoted for bravery to the rank of castellan." Later he would make note of infantrymen who received awards for valor and distinguished service during the Indian campaign.

It is unclear exactly how the infantry fought or how they were deployed and equipped—especially before the advent of firearms. In most combat accounts Babur does not specifically mention the proportion of infantry to cavalry or where the infantry were located on the battlefield. Presumably many of the infantrymen used arms and equipment similar to those of the cavalry. Some of them did own horses of their own and may have ridden them to battle. Babur never explicitly describes the use of dragoons or mounted infantry, but such an expedient would
explain some of his more confusing battle narratives. In one account he
describes a cavalry raid against a large force of Afghan tribesmen. Near the end
of a long running fight there are somehow some foot soldiers still keeping pace
with Babur’s horsemen—for it is at this point that Dost Sarpuli, the decorated
infantry officer, is mortally wounded. Haidar Mirza, Babur’s cousin and fellow
chronicler, writing in the Tarikh-I-Rashidi, describes another Central Asian
warlord of the same period who did deploy mounted infantry in large numbers.

Babur makes many references to individual foot soldiers armed with bows.
He also discusses a weapon particularly suited to the infantryman—the
crossbow. Crossbows were especially valuable during sieges because they were
ideal for sniping. Unlike a conventional archer, a crossbowman could fire his
weapon while lying prone and behind cover. He could also keep it cocked and at
full draw while carefully lining up a shot or waiting for a target to emerge. Babur
describes his own experience as a sniper, firing a crossbow from the ramparts of
Samarqand while that city was under siege. Before muskets became
commonplace, the Ottomans used Janissary infantrymen as missile troops,
arming them with crossbows or heavier, more powerful versions of the cavalry
bow. It is uncertain whether or not Babur ever employed similar large formations
of foot archers. Once firearms were adopted they replaced bows of all sorts as
the ranged weapon of choice for his infantry. It is clear that Babur did use large
numbers of musket-armed soldiers to deliver massed fire—with great effect.
However they were armed and equipped, large numbers of infantry were vulnerable whenever they had to move in the open, away from the safety of mountains, forts or city walls. Western armies designed a number of protective formations to defend their foot soldiers against attacks by cavalry or superior numbers of enemy infantry. It is not known whether or not Babur ever encountered descriptions of Swiss pike squares or Spanish-style tercios, but it is doubtful that such tactics would have been adequate for his needs even if he had tried to adopt them. Fighting in Central Asia and India, he faced hazards that were rarely seen on European battlefields. The first of these was the war elephant. Elephants were often used in place of heavy infantry in Indian armies, fighting at the front and center of the battle line and smashing their way through ranks of enemy foot soldiers. Their size and appearance made them especially intimidating—their destruction of morale was just as important as the physical damage they inflicted. Elephants, however, were far from invincible, especially against steady and disciplined troops. When wounded or frightened they were as much a threat to their handlers as they were to the enemy. In one of the few recorded incidents of combat between European soldiers and elephants, during the battle of Malacca in 1511, the Portuguese infantry held its ground. Muskets and pikes prevailed over tusks. 17

There was another, much more serious threat, however—mounted archers in large numbers. Cavalry was especially menacing in a Central Asian setting because it could attack both by shock and by fire—driving home an attack with lance and saber or standing off and launching clouds of arrows. Mounted archers
were rare in the West, mainly confined to the Ottoman frontier and elsewhere in Eastern Europe. The missile weapon of choice for European cavalrymen was the wheel lock horse pistol or carbine. A typical horse soldier might carry two to six of these—single shot weapons that were very difficult to reload while in the saddle. By contrast the horse archer might carry 20 or more arrows, and his composite bow was more accurate and had greater range than any pistol. A large body of horsemen so equipped would be a dire threat to any formation of infantry caught in the open. Those foot soldiers with firearms could shoot back, but the archers’ rate of fire would still be several times that of the muzzle-loading muskets.

Babur’s infantry clearly needed protection more substantial than that offered by a few rows of pikes. His cavalry was equally vulnerable if confronted by greater numbers or surprised while dismounted or encamped. Babur relied heavily on field fortifications to protect his men. Like a Roman legion, his army would literally dig in while encamped in hostile territory, excavating a perimeter of trenches and erecting portable barricades. Unfortunately such defenses were almost impossible to carry into battle or deploy hastily in the face of an enemy. Babur eventually learned of a better solution—a true mobile fortress—from the same foreign experts who instructed him in the use of firearms. This was the wagon laager or, as Babur often described it, the “Anatolian” defense. As the name implies, this practice was adopted from the armies of the Ottoman Empire. During the early 16th century the Ottomans devised tactics based on formations of specially built carts. Some of these wagons were designed as shelters for musketeers and other infantry while the remainder were used as platforms for
mounting cannon. They could be used as field fortifications for an army at rest, prepositioned in anticipation of a fight or maneuvered to form an instant redoubt in the midst of a battle. The Ottomans may have learned the use of the wagon laager from the Hussites, Bohemian religious nationalists who had successfully employed similar tactics in their wars with the Germans a century earlier. Contact with Hussite mercenary gunners during the 15th century has been cited as an important factor in the Ottoman adoption of firearms. Later Ottoman experimentation with wagons may not have been coincidental. Their Hungarian enemies also made extensive use of wagon tactics, probably learned from the same source. The Hussites in turn had learned their skills from the Russians, who had long used formations of carts as a defense against the Tatars—another nation of horse archers from the steppes. 20

In later battles Babur used these wagons and other obstacles to anchor his center and immediate flanks. The carts were arranged in a loose formation and infantry was deployed in advance of them as skirmishers and a first line of defense. Ropes or chains were strung between wagons in order to prevent the passage of enemy cavalry. Other obstructions—trenches, stakes, mantlets, and larger portable barricades—were also placed at the gaps. Musketeers fired from behind this cover while gunners served cart-mounted cannons. Reserves of infantry and cavalry waited behind the wagons. When these reserves were needed, the chains were lowered, allowing them to move forward through the gaps. Wagon formations were also used offensively. Carts and lighter artillery pieces accompanied by infantry could be moved forward to pressure enemy
positions. Portable barricades fitted with wheels were also used in these maneuvers. These were particularly useful because they did not require draft animals—the soldiers could push them along as they advanced.

The most important addition to Babur's arsenal was gunpowder. The conversion to firearms is not discussed in the Baburnama, as it took place during a period covered in the lost section of that document. During the late 15th and early 16th century guns were gradually filtering into India from both Europe and East Asia. They were mainly confined to southern and coastal regions that conducted regular trade with gunpowder-using countries like China, Portugal and the Ottoman Empire. Firearms were still a novelty in Afghanistan and North India at the time of Babur's conquests. Babur reports several engagements against enemies in this region who had never seen guns before. The time and place of Babur's first experience with gunpowder is uncertain. He may have gained access to firearms by way of Persia. After 1514 the Safavid Empire, stunned by a series of crushing losses at the hands—and guns—of the Ottomans, embarked on a crash program to modernize its army. Shah Ismail was determined to adopt the weapons that had defeated him, importing large quantities of firearms and hiring foreign experts in their operation and manufacture. Babur had previously fought as an ally of the Safavids in their wars with the Uzbekhs. He may have used his contacts in Persia to acquire his own share of equipment and expertise. By the time the narrative of the Baburnama resumes in 1519, Babur had amassed a sizeable arsenal of small arms and
artillery and retained a number of Persian and Anatolian advisors to instruct him in their use.

Most of Babur’s artillery was of two basic types. Heavy cannon—firing balls of about 25-30 pounds—were carried on four-wheeled wagons, with their barrels laid flat down the length of the cart. These big guns were especially useful against fortified positions. They eventually replaced Babur’s traditional siege train of catapults and trebuchets. Unfortunately the heavy artillery was very cumbersome to maneuver and aim. The gun barrel was fixed to the carriage, making elevation and firing at varying ranges extremely difficult. Smaller guns—3 or 4 pounders mounted on two-wheeled carriages similar to the European style—were a more flexible option. The lighter cannon—while not true field artillery like the horse-drawn guns of a later era—could be moved more easily during combat. Their smaller carts could also be tilted to adjust range and elevation. All of these guns were cast from brass or bronze and fired stone shot, with a maximum effective range of about a mile. Gun carriages—along with the other carts used in the wagon laager—were usually drawn by teams of oxen. A third, less common class of artillery was the heavy siege gun. These massive cannon were extremely difficult to transport. They were often cast on site in a portable foundry or assembled from pre-cast sections.

The standard small arm in Babur’s army was the matchlock musket. These guns were very similar to models used in the Ottoman Empire. The earliest versions were probably made of brass instead of iron. This weapon had approximately the same range as a composite bow, but its rate of fire was less
than a third as great. However the musket shared many of the advantages of its predecessor, the crossbow. It was much easier to master than the composite bow. It could be fired while in a prone or kneeling position and from behind cover. The matchlock could be cocked and held ready to fire as its owner lined up a difficult shot. Musketeers rarely stood in the open or fired their weapons from an “offhand” position. Instead they used any convenient object—the side of a wagon, a battlement or barricade—to steady their aim. They usually carried forked shooting sticks to use when no other rest was available. Muskets were also valuable for display and intimidation—especially against enemies who had little experience of firearms. One of the first recorded instances of execution by firing squad occurred during the Indian campaign, when Babur assigned teams of musketeers to dispose of prisoners. This novel method of eliminating unwanted captives—the sword was the usual instrument in such cases—may have been intended to provide the locals with a graphic demonstration of the new ruler’s power.

Babur’s tactics evolved along with his arsenal. He built and improved upon the model of the classic Central Asian cavalry army. Even in his later campaigns he still used the same basic formation passed down by his predecessors. A strong center held and fixed the enemy while flanking elements sought to encircle it. However Babur’s version of this system emphasized defense above all else. He did not seek to immediately overpower the enemy. In a sense his tactics were a variant of an old steppe ploy—the feigned retreat. The object was to lure the opponent into the offensive. This worked best when the enemy saw
itself in a position of relative strength—due to a larger force or the assumption of cavalry’s dominance over infantry. Yet the supposedly vulnerable infantry combined with mobile fortifications and firearms formed a nearly impregnable core—and a deadly trap for an overly aggressive foe. Once the enemy had exhausted itself in futile attempts at a breakthrough, reserves could drive forward from the center—or cavalry emerge from the flanks to perform the traditional envelopment. This counterpunching technique would be especially useful in the Indian campaign, where Babur’s army faced greatly superior numbers.

Babur’s growth as a commander and tactician can be clearly seen in the Baburnama. His innovations were not a sudden burst of genius—they emerged gradually over a series of campaigns and battles. As time passed he was called upon to master armies and implements of increasing size and complexity. The lessons learned were often difficult, including defeats as well as victories. Much of the process was in figuring out what not to do.

An excellent example of mistakes and their consequences occurred at Sar-I-Pul in 1501. Babur led his army out of Samarqand to meet the forces of the Uzbek warlord Shaibani Khan, who was intent on recapturing that city. When he encountered the enemy army and discovered that it is was larger than his own, Babur withdrew into field fortifications and awaited reinforcements. It was at this point that he embarked on a series of blunders that would ultimately result in disaster. With help less than two days away, Babur decided to leave his trench lines and immediately offer battle. He did so because of a favorable astrological event that was predicted to occur on that date. Once he made the decision to
fight, he arrayed his troops in a dangerous position with their backs against a river. As battle was joined, the Uzbeks immediately began to probe for Babur's left flank. This was a typical maneuver in steppe engagements—many Central Asian societies saw the right hand as auspicious. The best soldiers were often placed on the right side of a battle line and would press vigorously against the enemy left. Babur's own elite troops were placed in the center front or "vanguard" position. The vanguard pressed forward as the left wing and the remainder of the center shifted left in order to fend off the flank attack. These movements caused a huge gap to open in the middle of Babur's line. The Uzbeks immediately poured through. Worse yet, the attempt to defend the left flank was unsuccessful. Babur soon faced enemy breakthroughs at both front and rear. He was forced into a retreat that soon became a rout. At this point some of the Mongol mercenaries in his reserve mutinied and attacked their former allies as they tried to flee. Babur and many of his surviving soldiers were trapped with their backs to the river and had to literally swim for their lives. Although Babur did reach the temporary safety of Samarkand, the failure of his campaign was assured. Shaibani Khan laid siege to the city and forced his surrender several months later. In his memoir an older, wiser Babur ruefully reflects on the rashness and immaturity that led to his undoing. "Who reaches hastily for the sword will bite the back of his hand in regret."  

Babur's next major engagement, at Kandahar in 1507, had a much happier outcome. His performance there indicated a vast improvement in both his own abilities and those of the troops under his command. Babur had embarked on a
forced march across Afghanistan with an army of 2,000, hoping to surprise the Uzbek-allied Afghan garrison of Kandahar. Instead he was the one to be caught off guard, ambushed by a much larger enemy force as he neared the city. To make matters worse, half of his army had been dispersed to forage and replenish supplies expended during the difficult journey. Babur had to confront an Afghan force estimated at 4 – 7,000 with only a thousand men of his own. Babur describes how organization and discipline saved the day.

Although our men were few, I had arranged them in an excellent formation. Never before had I made such a good battle array. Under my immediate command I had a select band of warriors upon whom I knew I could depend, and I had posted them in groups of ten and fifty under commanders of ten and fifty. Each group had its place to stand in the right and left wings and knew what they were to do during battle. 28

Babur goes on to describe his formation in great detail. The standard composition of left and right flanks, center and vanguard was divided into even smaller units. For example the center was subdivided into a “left arm,” “right arm” and the “close” contingent that served as Babur’s bodyguard. Perhaps the most remarkable feature of this battle was the ability of Babur’s troops to rapidly compose themselves and maneuver in such a complex formation—even under fire and with their numbers already thinned by half.

As the fighting started, the Afghans, following the usual Central Asian practice, overloaded their right and attempted to envelop Babur’s left wing. They failed to realize that that part of the battlefield was the least suitable for an attack, with a large network of irrigation canals impeding their advance. Babur was able to hold off the assault with only a handful of men. He took advantage of this

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opportunity, shifting most of his troops to the center and right. His attack on the enemy center was checked, but his men on the right met with more success, eventually turning the enemy’s left flank. The Afghans were forced to retreat. Babur reassembled his army, marched on to Kandahar and took the city without a fight. The victory was due in part to the mistakes of the enemy, but it was still a brilliant performance by Babur. He had carefully organized and prepared his men and was able to assemble and deploy them at a moment’s notice, in the face of an oncoming enemy. He started the battle working from a prearranged script but was still able to improvise and take advantage of opportunity as it arose. The conduct of his soldiers proved the quality of his leadership. They performed capably and courageously under the most adverse of conditions. Babur had come a long way since his bumbling at Sar-I-Pul.

Terrain was also important to the victory at Kandahar. Babur had been fortunate. Although he was forced to fight a battle not of his choosing, the action took place on favorable ground. By the time of his next major engagement he had gained the ability to reshape any battlefield—to essentially create his own terrain. The army he brought to Panipat in 1526 was radically different than the one that fought at Sar-I-Pul and Kandahar. That force was still dominated by cavalry and cavalry tactics. Babur’s new army had been transformed by the introduction of firearms and mobile fortifications. While horse soldiers were still the most numerous element, it was the core of infantry, wagons and guns that made the force truly formidable. That center allowed Babur to withstand attacks by greater numbers and mount a strong defense even in open country with no
other natural or manmade obstacles nearby. Firepower and a portable fortress combined with the mobility and shock ability of cavalry provided great flexibility and allowed Babur to dictate the pace of battle.

In the spring of 1526 Babur invaded India in an attempt to overthrow Sultan Ibrahim, the Afghan ruler of Delhi, and claim the throne for himself. Babur had previously conducted a number of inconclusive raids into India, but reports of internal dissension in Ibrahim’s kingdom suggested that now was the time to achieve a more decisive result. His plan seemed reckless at first. Distractions aside, the Sultan still had a vast advantage in manpower. When Babur approached from the northwest, Ibrahim mobilized a huge army and moved to block his advance. Babur halted near the town of Panipat and prepared field fortifications in anticipation of an attack, arranging his army in a formation perpendicular to the enemy’s expected line of advance. He had 700 carts ready, many of them apparently requisitioned from the surrounding countryside. Most of these were formed into a wagon laager at the center of the line. The musketeers and artillerymen were placed here, with other infantry to serve as their bodyguards. The buildings of the town anchored the right flank. A network of trenches and tripod-shaped portable barricades guarded the left. Gaps were left in the fortifications at intervals of about 150 yards to allow the passage of cavalry from the rear.

Babur’s total invasion force was about 25,000 strong, but only about half of these troops were available at Panipat. Ibrahim’s army was reported to be in excess of 100,000. This estimate is probably greatly exaggerated, but even more
conservative figures would place the Sultan at a numerical advantage of 4:1 or
greater. His men were also supplemented by hundreds of war elephants. Despite
this vast superiority in numbers, Ibrahim was understandably reluctant to attack
Babur in his prepared positions. He placed his army opposite the invader’s force
and awaited further developments. Days of inconclusive skirmishing ensued
while Babur attempted to goad his enemy into the offensive. On April 20 Ibrahim
finally rose to the bait. Shortly after sunrise he launched a frontal assault on
Babur’s position, pressing him hard on the center and left. However the attackers
soon lost momentum, entangled in a web of obstacles and battered by musket
and cannon fire. Even elephants were unable to advance. Ibrahim’s troops were
poorly disciplined and indifferently led. Seemingly at random, some units opted to
retreat while others continued the attack. Impeding each other’s movements,
they often succeeded in neither course. As the enemy continued to flail about,
Babur moved to take advantage, dispatching cavalry from both wings to flank
and encircle them. The horsemen poured arrows into them from the sides and
rear as gunfire continued from the front. Under pressure from all directions the
enemy collapsed. After less than half a day of fighting the battle ended in a rout.
“At noon the army was overcome and vanquished to the delight of our friends. By
God’s grace and generosity such a difficult action was made easy for us and
such a numerous army was ground into the dust.” 29 Estimates of enemy dead
ranged from 15,000 to as high as 50,000. Sultan Ibrahim himself was among the
victims.
Babur immediately established himself as the new ruler of Delhi, but his victory had not granted him undisputed control of the region. Led by Rana Sanga, a coalition of Hindu Rajput leaders had already risen to challenge the authority of Ibrahim. They saw his downfall as an opportunity and decided to attack Babur while he was still new to the throne—and presumably still vulnerable. In March of 1527 Babur returned to battle—this time as Delhi’s defender, not an invader. He intercepted the Rajput army near the village of Khanua. The fight that ensued would be his greatest victory—a near perfect application of the tools and tactics that he had worked so long to develop. Khanua would serve as a classic example of the Mughal battle. It is notable because it was particularly well documented. Instead of writing his own description, Babur selected a highly detailed after action report composed by a subordinate and grafted it into his memoir. Yet the battle is most important because its outcome not only ensured Babur’s position as the most powerful man in India—it permanently changed the nature of war and combat on the subcontinent.

As at Panipat, Babur was facing a great disadvantage in numbers. Contemporary estimates are unreliable, but the enemy army—mainly composed of cavalry—may have approached 100,000. Like Ibrahim, Rana Sanga also had a large complement of war elephants. Again Babur remained on the defensive. He assembled his mobile fortress and awaited the onslaught. The Baburnama describes a defensive formation resembling a phalanx. "The holy warriors of the Islamic army... formed their ranks as straight as pines, their cone-shaped
helmets shining like the sun... Each rank was as iron like as Alexander’s dam, firm in its straightness." 30 Once more the guns and wagons were assembled. “Maintaining their resolve, in the manner of the holy warriors of Anatolia they formed a row of caissons and bound them together with chains as cover for the matchlock men and mortar men.” 31

The enemy’s tactics were also familiar. They launched a furious frontal assault, simultaneously attacking the center and both flanks. “Like ants they swarmed from left and right, mounted and on foot, thousands upon thousands.” 32 Babur’s line held. Although the enemy was checked by gunfire and the prepared defenses, they did not lose their will or cohesion. Rana Sanga’s soldiers, tougher and more disciplined than Ibrahim’s, kept up the pressure. As the Rajputs brought in yet more fresh troops, Babur was also forced to commit his reserves. The stalemate continued for hours, until Babur decided that the moment had arrived to take the offensive. This time his initial counterattack would not target the flanks but aim directly at the enemy center. Instead of the cavalry he called upon his foot soldiers. In this moment of crisis Babur’s infantry would prove their worth beyond any doubt, winning their place both on this battlefield and those of the future.

When the battle had raged for a long time, an order was issued that the warriors... who were like lions in chains behind the caissons, should emerge from the right and left of the center and station the matchlock men in the middle and fight from both sides... they charged from behind the caissons and spilled the dawn-red blood of the hapless infidels... The royal matchlock men, as ordered, left the caissons for the midst of battle, and each one of them gave many of the infidels the poison of death to taste. The infantry, by rushing into great danger, caused their names to figure prominently among the lions of the jungle of courage and the chivalrous heroes of battle. At this same time the
imperial command was issued to drive the caissons forward, and the royal personage himself... moved toward the army of the infidels. On all sides, the victorious soldiers witnessing this... swelled mightily. 33

The infantry, carts and light artillery continued to push forward, disrupting the Rajputs' formation. As the enemy began to lose cohesion, Babur finally released his cavalry to flank and encircle them. The opposing troops were surrounded on three sides and forced into a shrinking perimeter. Even in this distress, the Rajputs continued to fight hard. They made several attempts to break through the cordon and at one point came close to succeeding. Finally exhausted, they began to flee in the only direction left to them—to the rear and off of the battlefield. It is possible that Babur—in this battle and at Panipat—deliberately left an escape route open. Such a move would spare his troops the casualties suffered in a fight to the death against a cornered enemy. It would also preserve at least a few survivors to fight another day—this time as his subjects.

The victory at Khanauj finally established Babur as the dominant power in India. Unfortunately there was little time left to enjoy this achievement. Babur died three years later, at the age of 47. His son Humayun succeeded him as Emperor. The new dynasty was soon threatened by Sher Shah, an Afghan warlord who sought to restore the Afghan empire of the late Sultan Ibrahim. Humayun's armies met those of Sher Shah in two major battles. He was defeated in both of these engagements. His failure forced him into temporary exile and nearly destroyed the fledgling Mughal state. However the battles at Chausa in 1539 and Kanauj in 1540 were not important so much for the details of their conduct or even for their outcome. Neither was an ideal test of leadership or
tactics. At Chausa Sher Shah duped Humayun by pretending to accept a cease fire and then routed his forces with a surprise night attack. Kanauj was lost after a large body of camp followers and laborers panicked at the sight of the advancing enemy and tried to crowd inside the wagon laager with Humayun's soldiers. Sher Shah's troops took advantage of the resulting confusion and overran their positions. The most interesting aspect of these battles is the composition of the armies involved. Both sides had arrayed and equipped their forces in direct imitation of Babur's example, using wagons, artillery and musket-armed infantry. By this time the number of weapons deployed had grown vastly, from dozens of cannon to hundreds. Humayun was reported to have 700 light and 21 heavy artillery pieces at Kanauj, backed up by thousands of musketeers. This arsenal may have been even larger before the losses at Chausa. Sher Shah's force was similarly armed. With this much firepower in play, defense had become paramount. Few commanders wished to risk an assault once an enemy had settled into its field fortifications. Even blasting apart such a position would be difficult—the limited mobility of artillery made it much more effective in defense than on the attack. The armies at Chausa spent three months sulking behind their barricades before Sher Shah's trickery decided the issue. Aside from outright treachery there were few options. Screening cavalry made it very difficult to surprise an army on the move, and well-trained troops could set up a wagon laager very quickly. One possible plan was to throw a wide cordon around the enemy, denying him supplies and reinforcements. That tactic might turn a strong defensive position into a trap, but it would take overwhelming numbers and
materiel to successfully contain and outlast the enemy. The attacker might also prevail in a long-range artillery duel—but only if he had more cannon or more proficient gunners than his opponent. Such a slugging match would also result in terrible casualties—for the winner as well as the loser. While Humayun’s battles represented a setback for the Mughal cause, they clearly illustrated just how thoroughly Babur had imposed his will. Even after his death he continued to reshape the conduct of battle and warfare in India. The traditional balance of power based on the warhorse and elephant was gone forever. Artillery and infantry had emerged as new arms of decision.35
CHAPTER 3

AKBAR: FROM ARMY TO STATE

The new military system would be further refined and perfected by Babur’s grandson, Akbar. Akbar was crowned Emperor in 1556 at the age of 12, after the untimely death of his father. Before his fatal accident, Humayun led a successful re-invasion of India, exploiting a succession crisis in the resurgent Afghan kingdom. The task of consolidating these gains was left to the general Bairam Khan, who had been appointed as regent by an impromptu conclave of nobles. His achievements included a crucial victory at the Second Battle of Panipat, which led to the demise of the famous mercenary captain, Hemu—the most capable and dangerous remaining contender for possession of Delhi. Despite Bairam Khan’s capable stewardship, the young Emperor resented his lack of control and had frequent, bitter arguments with the regent. He cultivated secret alliances with a number of nobles, and in 1660 he used this faction to outmaneuver Bairam Khan and force him into exile. It would take two more years of intrigue—punctuated by occasional violence—for Akbar to purge his enemies in the court and claim uncontested authority.
This rise to power emphasized some of Akbar's most compelling traits. He was arrogant and stubborn, but he was as clever as he was strong willed. He applied a fierce intelligence to any problem placed before him. While Akbar exhibited great physical bravery—he became famous for leading from the front and exposing himself to personal danger on the battlefield—he was more remarkable for his intellectual courage. He did not fear change and often pursued innovative and unorthodox solutions. A contemporary observer described his hunger for knowledge.

He is a great patron of learning, and always keeps around him erudite men, who are directed to discuss before him philosophy, theology and religion, and to recount to him the history of great kings and glorious deeds of the past. He has an excellent judgment and a good memory, and has attained to a considerable knowledge of many subjects by means of constant and patient listening to such discussions... He has also become able to clearly and lucidly to expound difficult matters. He can give his opinion on any question so shrewdly and keenly... he excels many of his most learned subjects in eloquence, as well as in that authority and dignity which befits a King. 35

Like his grandfather, Akbar was fascinated by gadgets, machinery and complex systems. He was an amateur architect and engineer—and above all an inveterate tinkerer.

Buildings erected by [Akbar] in various parts of his dominions... have been built with extraordinary speed, by the help of a host of architects masons and workmen... In order to prevent himself being deafened by the noise of the tools with which stones are shaped and beams and other timber cut, he had every thing cleverly fashioned elsewhere, in accordance with the exact plan of the building, and then brought to the spot, and there fitted and fastened together... [Akbar] is so devoted to building that he sometimes quarries stone, along with the other workmen. Nor does he shrink from watching and even himself practising, for the sake of amusement, the craft of an ordinary artisan. For this purpose he has built a workshop near the palace, where also are studios and work rooms for the finer and more reputable arts such as painting, goldsmith work, tapestry-making, carpet and curtain-making and the manufacture of arms. Hither he
frequently comes and relaxes his mind with watching at their work those who practice these arts. 37

Unlike Babur, Akbar did not leave a personal memoir. Despite his intelligence and his access to the finest education available, he was illiterate. Some historians have speculated that Akbar suffered from dyslexia or some other similar disorder. 38 There were, however, a number of detailed accounts written by his contemporaries. The most important of these were composed by Abu al-Fazl, Akbar’s friend and trusted advisor. The Akbarnama served as the Emperor’s official biography while the Ain-i-Akbari provided a comprehensive almanac of the Empire. These narratives illustrate how Akbar went about building a formidable military machine—and an even more formidable state.

Technology was an essential element of Akbar’s system. He employed the same basic tools as Babur and Humayun—the musket and the cannon—but he was able to implement much more refined and capable versions of these weapons. The improvements went beyond gains in performance durability and reliability. The new equipment was much more diverse, with specialized models for every need. This was especially true in the field of artillery. Babur’s army deployed two basic types of cannon. Akbar’s forces had over a dozen different models. The new weapons were concentrated at opposite ends of the spectrum. Akbar saw a need for smaller, easily portable guns—field artillery in the truest sense. He experimented with bronze and wrought iron cannon that were light enough to be pulled by horses instead of teams of oxen. In the later Empire these guns would be known as the “artillery of the stirrup.” Some of the pieces
resembled Gustavus Adolphus’s famous “leather guns.” They were made from wrought iron staves and hoops surrounded by reinforcing layers of copper or brass plating. This was an especially light and cheap design, but the safety issues were obvious, and many artillerymen were understandably reluctant to adopt them.

The Mughals also fielded a variety of even smaller pieces. Swivel guns became very popular for antipersonnel use and close-in defense—they were fired from battlements, the decks of ships and from inside wagon laagers. There were also experiments with an intermediate form midway between a small swivel gun and a large matchlock. This was a true “musket” according to the European terminology of the day—as opposed to the smaller “arquebus.” Perhaps the most ingenious type of light cannon was the chatumal. This was a swivel gun attached by a harness to a camel’s back. It could be operated by a single person, who controlled the camel and served the gun from a special saddle mounted on the animal’s rump. A skilled gunner could fire and reload without dismounting. Another variant of this weapon was designed to be fired from an elephant. These guns were not tremendously powerful, and the animals carrying them had to stop for every shot. Despite these limitations, however, they offered great tactical flexibility. Camel guns were inexpensive and could be fielded in great numbers—and they were “galloper guns” in every sense of the word, able to move much faster than conventional horse artillery.
There were also developments at the other extreme. Akbar's forces deployed a number of super-heavy siege guns and mortars. These were similar in their basic form to models used by Babur, but they were much, much larger. Typical examples fired projectiles ranging from 250 – 700 pounds, but these were dwarfed by a few true giants. One gargantuan mortar used at the siege of Ranthambor was reported to launch a payload of over 3,000 pounds. It required 1,000 oxen and several elephants for transport. The intimidation and outright terror inspired by these monstrous weapons was as effective as the physical damage they inflicted. They were a tangible expression of the power and might of the Empire. "Shock and awe" is not just a 21st century concept.

As the artillery changed, so did the ammunition. Stone shot was still the most prevalent type, but metal cannon balls became more common. Most of these were made of brass. Brass was expensive in bulk, but it did offer some advantages. It was much easier to work than stone. Unlike stone projectiles, brass shot could be manufactured in a hollow version, which conserved metal. Moreover, a hollow ball traveled further when propelled by an equivalent powder charge—or, in the interests of economy, it could travel the same distance with a lesser charge. The obvious drawback was that a lighter projectile did not have the same force at impact. This problem, however, was easily remedied. The adoption of hollow shot inevitably led to the concept of explosive shells. During Akbar's reign the Mughals began to use hollow brass cannon balls packed with black powder. These were fitted with slow-burning fuses that were designed to ignite the powder charge when the shell ruptured on impact.
Akbar was also fond of another type of explosive ordnance—the rocket. Rockets actually predated other gunpowder weapons—they had been present in India since at least the 14th century. Unlike other Asians, however, Indians did not abandon rocketry after the introduction of cannon. The war rockets used in South Asia were of an especially advanced design. Most notably, the body of the rocket was constructed of metal instead of wood or paper. This made the device stronger and relatively weatherproof and allowed for a larger payload of black powder. The metal casing also turned into shrapnel on impact, increasing the projectile’s destructive power. The Mughals eagerly adopted rockets. Rockets offered additional flexibility, even in an army well equipped with firearms. They were even easier to use than a musket and could be fired with little preparation. Some soldiers launched their weapons by lighting the fuse, grasping the rocket by its stabilizing shaft and literally hurling it into the air like a javelin. A safer option was to use a firing trough or to simply prime the device and then step away after angling it against a convenient embrasure, cart or fence rail. It may also have been possible to create airbursts by using fuses of varying lengths. Rockets packed a considerable punch, but were actually very light and easy to transport. The propellant tube of a typical rocket was about a foot long and two or three inches wide and could carry several pounds of black powder about 1,000 yards. The wooden guide shaft took up most of the weapon’s five to seven foot length. A camel could easily carry 20 or more rockets—or they could simply be stacked in the back of a wagon like cordwood. The Mughal army consumed rockets in vast quantities. Akbar ordered a shipment of 16,000 sent to the
garrison of a single fortress in anticipation of an attack. Rockets were an
excellent anti-personnel weapon, but they were particularly useful against enemy
cavalry and elephants—their shrieking sound terrified animals. The Mughals
used a special type with a built-in whistle in order to enhance this effect. Rocketry
is one instance where the West adopted Indian military technology. The British
Congreve rocket was designed in imitation of the weapons used by Indian
enemies in the wars of colonization. It remained in service until the late 19th
century and was a distant ancestor to the various military rockets and missiles in
use today. 40

Small arms were also improved under Akbar’s watch. The brass matchlock
musket used by Babur’s troops was replaced by sturdier designs made of iron or
steel. The first version was relatively primitive. Its barrel was essentially a flat
sheet of iron that had been rolled into a tube and spot welded where the edges
met. It may have been no coincidence that this was the same process used to
manufacture rocket casings. Later versions incorporated a more sophisticated
manufacturing technique, with a larger sheet of metal rolled around itself several
times. This design was similar to contemporary European practice and made for
much a more durable weapon. In some ways this model was actually superior to
its Western counterpart. The Mughals placed a premium on marksmanship and
accuracy—Akbar himself was an avid hunter and target shooter—and designed
accordingly. The bore walls of the standard issue musket were unusually thick
in relation to the bore, and much of the weight was concentrated near the
muzzle. This heavier weapon was unbalanced and difficult to aim offhand, but it

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became extremely stable when fired from a rest. The overall concept was not
dissimilar to the “bull barrel” of a present day target rifle. These guns were
exceptionally rugged, more so because most of them were made with high
carbon Damascus steel. This strength meant that they could be safely fired with
a much larger powder charge. They did “not burst though let off when filled to the
top. Formerly they could not fill them to more than a quarter.” 41 That led to much
higher muzzle velocities and a corresponding increase in range and accuracy.
Further refinements to the basic infantry musket included a more reliable
matchlock mechanism and the addition of iron sights. Some specialized sniper
models were even fitted with bipods. There was also a wheel lock variant, but as
in Europe, the high cost and questionable durability of this action made its
widespread adoption in infantry weapons problematic. With the prevalence of
mounted archers, the wheel lock was never needed for use in horse pistols.
Handguns of any type remained quite rare in the Empire. 42

This arsenal of advanced weaponry led many of Akbar’s enemies to refuse
battle and rely on fortifications for protection. Siegecraft became increasingly
important over time. The Mughals’ basic techniques for siege warfare were not
dissimilar to contemporary European practices. The target fortress or city was
surrounded by lines of circumvallation and bombarded at range. Two methods
were used to actually breach the enemy’s fortifications—mining and sapping.
Miners tunneled underneath the objective and planted explosive charges to
collapse structures from below. Saps, or approach trenches, provided cover for
advancing troops and most importantly they allowed heavy guns to be moved
close enough to blast a breach in the walls. The Mughals, however, did have a few signature variations on this theme. Instead of the basic open trench network—dug in a zigzag pattern to avoid enfilading fire—they often used the sabat, or covered trench. A roof and walls of heavy timbers covered the sabat. It protected its occupants from small arms and light artillery fire and concealed their activities and movements from the enemy. Sabats allowed attackers to approach fortifications by the most direct route possible, which was a great advantage when moving the huge and cumbersome Mughal siege guns into position. The trenches had to be very large in order to accommodate those weapons—some were wide enough for 10 men to ride abreast and deep enough to hide an elephant and its passengers. 43

Elephants were another distinguishing feature of Mughal siegecraft. They acted like walking bulldozers. The animals were armored and rigged with special tackle that projected battering rams or cutting blades from their heads. So equipped they were able to smash through gates, lighter walls and earthworks. Elephants, however, were less valuable in the open field. Akbar maintained a huge stable of the beasts, but much of their value was as status symbols and props for pomp and circumstance. War elephants still accompanied his armies, but they no longer occupied their traditional privileged position in the vanguard. Instead they were kept in the rear and used to exploit breakthroughs or held back as a defense of last resort. They often served as a sort of observation platform and mobile command post, but this role was not without risk. On a battlefield dominated by gunpowder weapons, elephants were the biggest targets around.
Experiments with elephant body armor and howdahs turned into armored fighting compartments did little to solve this problem. A truly bulletproof suit of armor would be too heavy for any elephant to carry. Even if the animal and its passengers could be fully protected, there was no way to shield the driver, seated in his vulnerable position right behind the head. 44

Abu al-Fazl gives Akbar personal credit for many of the inventions used in service of the Empire. As intelligent as Akbar was, such assertions overstate the facts. Many of the innovations in artillery and small arms were probably based on European examples. The famous camel gun was most likely invented in Egypt. Like Babur, Akbar was not afraid to steal a good idea. His genius lay not in creating devices from whole cloth but in correctly judging the value and potential of existing tools and combining them into new systems. Yet the efforts of the Emperor and his corps of advisors and engineers were part of an even larger whole. Akbar’s reign was a time of invention and innovation all over India—by the Mughals, their allies and their enemies. New military technology had transformed the subcontinent—and the race was on to perfect the next generation of armaments. Many secret weapons were designed and tested by military professionals and amateurs alike. They ranged from primitive grenade launchers and bazookas to fortresses equipped with revolving gun turrets. Most of these devices would prove to be wildly impractical and have no impact on larger events. This urge to invent, however, was a natural response to the tremendous challenges faced by all sides. The Mughals were struggling to control a rapidly growing Empire. Their rivals were faced with an enemy more formidable than any
they had ever met. Every statesman and soldier in India—whatever his allegiance—had to adapt to a new way of war that would have been completely alien only two generations ago. 45

Akbar’s innovations extended beyond the realm of technology. The success of his military arose as much from the adept management of manpower as it did from the mastery of machines. The Mughal army continued to rely on the three core elements of Babur’s regime—horse archers, musket-equipped infantry and artillery, but the basic components were supplemented by a wide variety of specialized units. Among these were a sizeable contingent of mounted infantry and the so-called corps of “gladiators”—elite infantry companies of highly skilled swordsmen and martial artists. The gladiator troops included specialists in a variety of fighting styles such as the sword and buckler and the two-handed sword. As their name implies, a few were assigned to the court to serve as palace guards and participate in mock battles and exhibitions of skill, but there were thousands more of them scattered around the Empire. It is unclear how many of them were actually attached to the regular army, but troops of this type may have acted as bodyguards for formations of musketeers. 46 Once the borders of the Empire reached the sea Akbar established a navy to supplement his army. Warships were invaluable for protecting riverine and coastal trade, transporting troops and supplies and supporting amphibious operations. They were especially useful in regions like Bengal, where the terrain was so dominated by rivers, lakes and estuaries that the distinction between land and naval warfare was not always clear.
A host of support troops backed up the fighting forces. Akbar created non-combat units for every conceivable purpose. They included military police, porters, pioneers and combat engineers, craftsmen, couriers, spies, logisticians, official news writers and propagandists. It was well understood that the army did not function in a vacuum, and that preparation for battle and management of its aftermath were every bit as important as the actual combat. The Mughal army was especially formidable because its technology and tactics were supplemented by a finely tuned network of logistics, communications and expertise.

Akbar himself acted as commander in chief of the army. His senior military advisor acted as its chief of staff. The Mughal military had two primary administrative divisions—a standing army under the direct control of the Crown and the troops commanded by senior officers, or mansabdars. Mansabdars were responsible for raising and equipping their own contingents of cavalry. For this purpose they were granted allowances by the Emperor—in the form of cash, land grants or a combination of the two. Mansabdars were allowed considerable discretion in the recruitment of their troops. They could invite members of their own tribe or clan, mobilize residents of lands under their control or draw upon India’s vast mercenary market. Their cavalry forces were supported by infantry—usually one foot soldier for every two horse soldiers—assigned to them from a central personnel bureau. These infantrymen included both archers and musketeers. In times of need, auxiliaries from allies or client states, local militias and mercenaries could further supplement regulars and mansabdari troops.

Unlike most other large Muslim states, the Mughals never used military slaves or
conscripts in any significant numbers. India’s population had been thoroughly militarized during the decades of disorder that preceded the foundation of the Empire. The Mughals had more potential soldiers on hand than they could ever use. Abu Fazl estimated that there were more than four million men within the borders who had access to at least rudimentary weapons and training.

In this system, most of the firearms were controlled by the regular army. The corps of artillery was officially designated as a portion of the royal household. 12,000 musketeers also served in the royal guard. Approximately 20,000 more were placed in the central personnel bureau and parceled out to the mansabdars. As Abu Fazl reminds his readers, “Guns are wonderful locks for protecting the august edifice of the state; and befitting keys for the door of conquest.” Some senior officers did maintain their own contingents of musketeers. This practice would become more accepted and widespread in the later Empire.

The Mughal military used the same decimal table of organization popular in Central Asia—squads of 10, companies of 100, battalions of 1,000 and divisions of 10,000—but they added many exceptions and provisions to this basic structure. The rank system was extremely complex, with 66 ranks and corresponding pay grades for just the senior officers. Akbar’s ministers compiled voluminous rules and regulations for both regular and mansabdari troops. The mansabdars’ specific obligations only began with the number of men they provided. They received highly detailed instructions, adjusted for rank, about every facet of their operations—the proper specifications for weapons and armor,
the number of remounts for each trooper, the amount and type of wagons and
draft animals, the mandatory complement of retainers and support personnel and
even the allowable breeds of warhorses. Each officer might also have specific
terms of service in his contract above and beyond those in the basic regulations.
The rules for the regular army were just as comprehensive and rigorous. There
were 15 separate pay grades for musketeers alone. There were 7 different
classifications for warhorses and 11 for elephants—7 for males and 4 for
females. A passage from the Ain-i-Akbari about the standard crew roster for
naval vessels exemplifies this extreme attention to detail.

The number of sailors in a ship varies according to the size of the vessel. In large
ships there are twelve classes. 1. The Nākhudá, or owner of the ship... He fixes
the course of the ship. 2. The Mu‘allim, or Captain. He must be acquainted with
the depths and the shallow places of the ocean, and must know astronomy. It is
he who guides the ship to her destination, and prevents her from falling into
dangers. 3. The Tandil, or chief of the khaláqís, or sailors... 4. The Nākhudá-
khhashab. He supplies the passengers with firewood and straw, and assists in
shipping and unloading the cargo. 5. The Sarhang, or mate, superintends the
docking and landing of the ship, and often acts for the Mu‘allim. 6. The Bhandári
has the charge of the stores. 7. The Karráni is a writer who keeps the accounts
of the ship, and serves out water to the passengers. 8. The Sukkángír, or
helmsman. He steers the ship according to the orders of the Mu‘allim. Some
ships carry several helmsmen, but never more than twenty. 9. The Panjári looks
out from the top of the mast, and gives notice when he sees land, or a ship, or a
coming storm. 10. The Gumti belongs to the class of khaláqís. He throws out the
water which has leaked through the ship. 11. The Táppandáz, or gunner, is
required in naval fights; their number depends on the size of the ship. 12. The
Khánwah, or common sailor. They set and furl the sails. Some of them perform
the duty of divers, and stop leaks, or set the anchor free when it sticks fast. The
amount of their wages varies, and depends on the voyage, or kúsh, as seamen
call it. In the harbour of [Húghlí] a Nákhudá gets 400 [Rupees]; besides he is
allowed four malíkh, or cabins, which he fills with wares for his own profit. Every
ship is divided into several divisions, for the accommodation of passengers and
the stowage of goods, each of the divisions being called a malíkh. The Mu‘allim
gets 200 [Rupees] and two malíkhs, the Tandil, 120.; the Karráni, 50 and one
malíkh; the Nákhudá khashab, 30; the Sarhang, 25; the Sukkángír, Pánjári and
Bhandarí, each 15; each Khārwah, or common sailor, 40, and his daily food in addition; the Degandáz, or gunner, 12. 48

All of these regulations were strictly enforced. Accountability was crucial to the Mughal system. Mansabdars and other officers were subject to frequent inspections. Unit rosters included not only names and numbers but also detailed physical descriptions of both men and horses. Horses and draft animals were branded with identifying marks as a further safeguard against inflated counts or misappropriation. Officers who violated regulations or simply performed poorly in their duties could be—and frequently were—demoted or sacked outright. Promotions for excellence were just as common. Those officers who failed to advance had little recourse to family ties, tribal affiliations or other forms of patronage. The Emperor had final authority over all personnel decisions. There was another element of Akbar’s system that retarded the growth of cliques and old boy networks—its diversity. Military and civil service was open to candidates of all ethnic and religious backgrounds. Such a policy allowed the Mughals to co-opt local elites—many former or potential enemies were placated by appointments to government service. As the Empire grew and thrived, ambitious Indians were joined by adventurers from all over the world. The Mughal administration eventually included Central Asians, Indians of all sorts, Persians, Arabs, Anatolian Turks, Africans and Europeans. Such a varied leadership—along with frequent transfers and reorganizations—made the creation of powerful factions and patronage networks difficult. Even land grants were temporary. Land holding mansabdars were periodically reassigned to parcels in other regions in
order to prevent the creation of fiefdoms and the emergence of a feudal system. All senior officers received extremely generous salaries, which served to immunize them against graft and bribery. In the end the Emperor was the final judge of an officer’s fitness. This essential feature—at least under the stewardship of a ruler as perceptive and demanding as Akbar—facilitated the creation of a true meritocracy.

There were additional challenges for officers in Akbar’s service. In the Mughal system there was no clear boundary between military and civil administration. This was reflected by the numerical ranks assigned to mansabdars. Each senior officer actually had two numbers next to his name. The first indicated his civil service pay grade while the second denoted his military rank—or more specifically, the number of cavalry he was expected to command. Professional soldiers often had to fulfill administrative tasks above and beyond the management of their land holdings. Likewise, officials who were bureaucrats by primary vocation were still responsible for mobilizing and leading troops. This arrangement forced officers to master a wide variety of skills. The Mughal system produced a special breed of officers—men who combined the qualities of warriors, administrators and businessmen. Many of the more successful mansabdars even attained the status of celebrities. Aside from the strict demands of their government, senior officers were subject to a remarkable degree of public scrutiny. As Jos Gommans notes, the combination of all of these elements created a remarkably advanced system.
What strikes the European observer of the twenty first century is the extent to which the Indian military labour market—at least its top layer—approaches the modern assumptions of a competitive labour market, such as freedom of entry and exit and a fair degree of competitive and meritocratic behaviour of all participants, only rarely to be curbed by rigid prescriptions of caste, religion or descent. This picture becomes even more convincing when the transparency of the market is taken into account... detailed information on each and every mansabdar was publicly available through stories and gossip told at the numerous bazaars and coffee shops of urban India. Their personalities, habits and movements were the topic of endless rumour and speculation... Apart from reading the official daily news reports that recorded changes of rank or new grants of jagir [land grants], one could as easily get the news by running into the nearest local bazaar... India was an information society par excellence. 49

Akbar took steps to refine this information society and harness India’s vast natural wealth, building the foundations of a national government and national economy. He divided his administration into four ministries under the direct control of the crown. Each had a separate area of responsibility—the army, the economy, the courts and the royal household. The empire was divided into twelve provinces, which were further split into sub districts. One of the primary purposes of these divisions was the efficient assessment and collection of taxes and other revenues. A special group of administrators was appointed to oversee taxation. Standardized coinage and units of currency ensured that tax payments—and retail prices—would be fair and consistent. Akbar established a postal service and a system of roads and customs houses to facilitate civilian trade and the movement of military supplies. In the interests of communication and efficiency, he mandated the use of a regulation calendar and measurements of time. Persian became the official language of the state. Akbar embarked on a series of massive public works projects, including the construction of an entirely new capital city at Fatehpur Sikri. As in the European states of that time, the
trend was towards centralization and increasingly sophisticated social networks. Once again, Akbar often innovated by imitating. Many of his initiatives were based on the practices of Persian and Central Asian governments—or even those of preceding Indian regimes. Yet all of those borrowed parts were combined into a coherent system that was unique—and uniquely successful. The territories won by generals would be held together by bureaucrats. The soldiers of the Empire were supported by invisible legions of civil servants, artisans and merchants.

Akbar’s goals extended beyond economy and administration. He sought to establish a viable political and ideological foundation for his state. The new, centralized Mughal system was a departure from the traditional Central Asian model of governance, which was based on patronage, blood ties and a brittle network of quasi-independent local chieftains. Akbar’s definition of kingship was absolutist. He demanded total obedience from the least and the greatest of his subjects. Akbar did not see himself as first among equals or simply the most powerful prince or warlord around. He claimed to be a uniquely capable leader appointed by God to bring peace, order and prosperity to India and—at least in theory—the world. His legitimacy, however, was based on more than grandiose claims or his status as heir to Timur and Chingiz Khan. In exchange for their loyalty, he offered his subjects a system of government based on diversity, tolerance and opportunity. There was no longer any hereditary elite. The clique of Central Asian chiefs who saw themselves as the rightful ruling class were finally convinced—literally at gunpoint—of the error of their assumptions. The only
nobles by blood were members of the royal family. The official definition of
"noble" was quantitative, not qualitative. It simply referred to senior officials with a
numerical rank above 500 on the civil service pay scale. Religious distinctions
were also dissolved. Influenced by Sufi and Hindu thought, Akbar evolved a
syncretic spiritual philosophy that became the de facto state religion of the
Empire. Over the bitter objections of the Muslim clergy, he recognized citizens of
all faiths as equal under the law and suspended the traditional poll tax on non-
Muslims.

Douglas Streusand describes the Emperor's social contract with his citizens
as the "Akbari Constitution." 50 It involved a "higher form of kingship" in which all
elements of a diverse society were united by submission. Whatever their status,
caste, faith or tribe, every citizen was equally inferior to the Emperor. Everyone
was meant to share in a common purpose—to assist their perfect leader in
creating a perfect state. Their rewards would be tolerance, security, prosperity
and justice. The sense of trust inspired by Akbar's rule was something short of
ture nationalism, but there was an emerging consensus that the Empire was the
best possible solution to the problems of society and economy. Loyalty was seen
as the best policy.

Akbar's state may not have been a perfect one, but it was formidable
nonetheless. Under his stewardship the Empire expanded to cover almost all of
northern India. The gains included Gujarat, Bihar, Bengal, Kashmir and most of
Rajasthan. Eventually the Mughal domain extended to its natural geographic
borders—the Himalayas to the north, the Arabian Sea to the west, the Deccan
Plateau to the south and the Bay of Bengal to the east. During the early portion of Akbar's reign, Mughal armies were in the field almost every year. Nearly 60% of the Imperial budget was spent on the military. All of that money bought a truly fearsome engine of conquest. A contemporary observer's account suggests the awesome might and spectacle of a Mughal army on campaign. "The army... increased so rapidly that it seemed to hide the earth. It extended over the breadth of a mile and half, covering the fields and filling the woods with a crowding multitude. No beast, if surprised on the way, could break through the ranks and escape. Even the birds, wearied by trying to fly out of danger, and terrified by the shouts of the soldiers, fall down exhausted to the earth." 51

Over time, open field battles became increasingly rare. Few opponents dared to directly confront the Mughal military machine. A number of them instead resorted to evasive, Fabian tactics or guerrilla warfare. Many a Mughal campaign ended not in a climactic clash of arms but in a futile chase—or in a hasty negotiation and surrender. Those enemies that did offer battle usually lived to regret it. At Tukaroi in 1575, a huge Afghan army attempted to overwhelm a Mughal force with a combined charge of cavalry and elephants. The Afghans succeeded in smashing a gaping hole in the Imperial center, but the proven combination of infantry, artillery and mounted archers eventually prevailed. After being driven back through their encampment, the Mughal infantry and cavalry in the center rallied, counterattacked and held the enemy long enough for the flanking cavalry to encircle and trap them. One year later the Rajputs attempted a similar all-out charge at Haldighati. The result was an even more decisive Mughal
victory. This battle was significant in that a contingent of musket-armed infantry was able to break an elephant charge without any support from artillery.\textsuperscript{52}

Fortifications were seen as another possible solution to Mughal superiority. Enemies hoped that they could outlast Imperial armies by securing their main forces behind fortress walls and using scorched earth and guerrilla tactics to starve the besiegers. The Sisodia clan of Rajputs, who held the fortress cities of Chitor and Ranthambor, made the most spectacular attempt at this strategy. Despite nearly ideal conditions—massively fortified citadels set in rugged terrain, a resource-poor countryside and a home base remote from the Imperial capital—they failed. In 1568 the Mughals besieged Chitor. After a frontal assault and attempts at mining failed, the invaders simply carved a huge gash in the mountain on which the city sat so that the great siege guns could be placed and fired from point blank range. Once the walls were breached, even suicidal bravery on the part of the defenders could not save the city from being stormed and sacked. The next year the Mughals repeated the same process at Ranthambor. Once the Mughal guns blew huge holes in the city walls, the garrison hastily surrendered in order to avoid Chitor’s fate. Akbar had served notice, in India there was literally no place to hide from the Empire.\textsuperscript{53}

Despite all of their advantages, the Mughals also had reasons for avoiding conflict. Akbar and his generals could be surprisingly risk-averse, often choosing negotiated settlements and the outright bribery of enemy leaders over a decisive confrontation. Battles in the new era of gunpowder weaponry were extraordinarily bloody—for the winners as well as the losers. There was no longer any such
thing as an easy victory. Any reasonably capable smaller force equipped with cannon and muskets and fighting from behind field fortifications or city walls, could extract terrible casualties even from an army several times its size. The defensive advantages provided by gunpowder slowed the pace of battle and made sudden victory through bold maneuver or astounding feats of generalship highly unlikely. Not surprisingly, the Mughals suffered very heavy casualties in all of their signature victories under Akbar, even when they had the advantage of fighting from the tactical defensive.

One potential solution to this impasse was to create bigger and bigger armies. If a force is large enough it can absorb any conceivable casualties. Better yet it may overawe the enemy into submission. Most importantly it can restore the element of maneuver on a scale much larger than that of a single battlefield. The Mughals mobilized their vast resources to create armies massive enough to flow across the landscape like a flood, bypassing and surrounding any obstacles. Stubborn enemy units or defensive positions could be cordoned off and neutralized instead of attacked directly. Babur’s largest army was probably no more than 25,000 strong. Akbar had more than 300,000 men under arms, and he led field armies of over 100,000 as far away as Afghanistan. Under Akbar’s successors the Mughal legions would grow larger still. 54
CHAPTER 4

TWO REVOLUTIONS: PARALLELS AND DIVERGENCE

Some of the challenges faced and solutions implemented during the foundation and expansion of the Mughal Empire were remarkably similar to contemporary developments in Europe. Perhaps the most striking parallels are to the rise of the Spanish military machine. Entering the final decade of the 15th century Spain was a minor player in European affairs, its territory divided between several Christian and Muslim kingdoms. Within two generations it had become a true world power, with an empire on which the sun literally never set. Much of this achievement arose from political and diplomatic developments such as the union of Ferdinand and Isabella and the alliance with the Habsburgs. Yet none of it would have been possible without success on the battlefield. Those battles were won with a highly developed combination of technology, tactics and organization.

This system, however, was not created without trial and error. The Spanish armies of the 15th century were remarkably similar to their Central Asian counterparts. They were dominated by large formations of light cavalry—the jinetes. Jinetes filled the same role as horse archers, although they were armed with javelins instead of composite bows. These troops were complimented by
smaller contingents of heavy cavalry and light infantry. Spanish tactics also conformed to the Central Asian model—they emphasized misdirection, feigned retreats, flanking maneuvers and envelopment. Most fighting took place on the southern frontier with Muslim Spain, but Christians also made war on each other. The emphasis was on raiding and small unit actions—large battles were relatively rare. A strategic stalemate prevailed for most of this period. Neither Castile and Aragon or their Muslim rival Granada was able to make any significant gains. Wars were usually "more parades than crusades." 55

This deadlock was broken by the introduction of gunpowder weaponry. The Spaniards learned the use of artillery from their neighbors in France and Burgundy. The aggressive anti-Muslim ideology of the "Catholic Monarchs" Ferdinand and Isabella provided obvious targets for these new weapons. In a single decade-long war the Spaniards overwhelmed the fortress kingdom of Granada, which had resisted Christian conquest for over two centuries. Time and again their artillery breached mountain forts and walled cities that were previously assumed to be impregnable. The surrender of the Granadan capital in 1492 marked the end of Muslim power in Spain and the final completion of the reconquista. 56

Yet the Spaniards would soon learn the limits of their new weapons. In Spain they had faced Muslim rivals very much like themselves—nearly identical in equipment, tactics and training. In a contest between essentially equal combatants, the introduction of artillery had been decisive. During their ensuing contests with France for control of the Mediterranean, the Spaniards would be
confronted with an entirely new kind of enemy. They would be forced to adapt
and improvise, reinventing their army in the process. When Gonsalvo de
Cordoba entered Italy to contest an invasion by the French king Charles VIII, his
army resembled those that had fought in Granada—large contingents of light
cavalry and light infantry around a smaller core of heavy cavalry. This force
would not be adequate for the task at hand. The French routed the Spaniards at
the battle of Seminara in 1495. The next Spanish army to enter Italy would be
entirely different in form and function.

Gonsalvo faced three new threats in Italy. The first of these was the
enemy’s artillery, which was at least as powerful as his own. The second came
from huge masses of heavy cavalry like the French gendarmes, formations much
larger than anything in the Spanish inventory. Finally there was heavy shock
infantry, most notably Swiss and German pikemen. An attack by pike squares
moving at almost the dead run could be just as terrifying and destructive as a
charge by massed war elephants. A traditional Spanish-style army—even
supplemented by artillery—was too fragile to stand its ground against such
concentrated shock action.

Gonsalvo’s solution to this dilemma resembled Babur’s and emphasized the
tactical defensive. He added large numbers of musketeers to the army—they
composed up to a sixth of his force. Infantry and artillery were meant to hold the
center of the battle line while cavalry encircled the enemy from the flanks and
reserve. Gonsalvo provided several layers of defense for his gunners and
musketeers. He recruited his own pikemen to serve as their bodyguards—an
addition which led to the creation of the famous tercio formation. Entrenchments and field fortifications provided additional protection. Whenever possible, the Spaniards also chose to fight near existing obstacles such as embankments, sunken roads and hedgerows. While Gonzalo never implemented a full-scale wagon laager he did use carts and purpose built mobile barricades to shield his infantry, especially during advances or counter attacks. Some of these were fitted with attached muskets, swivel guns and even spear points and blades. C.W.C. Oman, writing about Gonzalo, could have easily been describing Babur. "[His] receipt for victory was to get into a fortified position, well garnished with firearms great and small, and then to lure the enemy to attack."

This new system paid immediate dividends. At the battle of Cerignola in 1503, Gonzalo played out a script that would be repeated at Panipat, Khunua and Tukaroi. His infantry and artillery, secured by field fortifications, held off repeated charges by French heavy cavalry and infantry. Once the enemy lost momentum the Spanish infantry led a counter attack at the center while cavalry turned the flanks. This pattern was to be repeated at later battles, most notably La Bicocca, where Spanish musketeers fighting from the cover of a sunken road shattered attacking columns of Swiss storm troopers.

The emerging primacy of defense led to a tactical impasse. It was possible with enough men—and especially enough artillery—to overwhelm a defensively oriented army by brute force, silencing their guns and trapping them in their own field fortifications. Yet such an effort—as illustrated most graphically at the battle of Ravenna—led to horrific casualties for both victor and vanquished.
Commanders became increasingly reluctant to offer battle. At the Garigliano River and Pavia, the opposing forces sulked in their entrenchments for weeks, daring each other to be the first to attack. Surprise attacks—under the cover of darkness and bad weather or facilitated by the enemy’s negligence—might eventually break a stalemate. Such was the case at Garigliano and Pavia, just as it was at Chausa. Even under ideal conditions, however, victory never came cheap.  

This pattern was similar to that which developed in India during Akbar’s reign. Over time military establishments grew increasingly risk averse and large battles became increasingly rare. Evasion and harassment became preferable to confrontation. Leaders sought alternatives to direct combat as a means of projecting power and controlling ground. Interlocking networks of fortifications, garrison troops and ready reserves were used to make large swathes of territory unsafe for enemy forces. As in India, armies grew larger and larger. If commanders were denied the ability to move freely at the tactical level they might amass the numbers needed to outmaneuver their enemies on an operational or strategic scale.

While there are obvious parallels between the early stages of the Indian military revolution and the origins of the European transformation, the end results of these processes are very different. The implements and organizations that composed Mughal military power would eventually diverge in form and function from their Western counterparts. In his essay “The Military Revolution: Origins and First Tests Abroad,” John F. Guilmartin provides a sort of checklist for rating
the European advances. He identifies six key components of the military revolution—infantry, combined arms, artillery, fortifications, sea power and the "community of arms." This framework is useful in exploring just how and why Indian military institutions evolved so differently from their Western equivalents.

Infantry was definitely a major force on the Indian battlefield. Mughal musketeers, however, operated in a much different environment than Western infantrymen. Unlike the Europeans, they had to face the threat of mounted archers. Maneuvering in large formations on the open field would be suicidal. Instead Mughal foot soldiers usually fought from cover—behind barricades or battlements or in trenches and fighting holes. Their training emphasized marksmanship and accuracy over rate of fire. Mughal infantrymen fought more as individuals than as a group—they behaved more like snipers than grenadiers. For this reason the pike and its successor the bayonet were never adopted. Instead the musketeers continued to rely on swords as side arms. There was no formal system of drill. These soldiers were used as a counter to enemy horse archers, but at the same time they were bound into a symbiotic relationship with their own cavalry. They needed cavalry protection to safely maneuver in the open. When Mughal-style infantry fighting unsupported were forced to confront well-drilled formations of European foot soldiers they did not fare well.

The hallmark of these battles is the tremendous success achieved by even small units of organized European infantry when they advanced with bayonets. The Indians, in contrast, preferred to engage in close individual combat with the tulwar, or curved scimitar... The disadvantage of this weapon is that it prevented the Indians from acting in concert and in closely ranked formations, thus considerably diminishing their effect on disciplined European troops. The latter
used the shock effect (and flank security) of closed ranks and the longer reach of their pikelike bayonets to sweep the Indians' loose formations from the field.\textsuperscript{58}

As the example above suggests, the Mughals required a number of elements to be in place in order to succeed. Their infantry needed a defined position and the support of artillery and cavalry to fight effectively. Such a combined arms approach was a defining element of the early Mughal military. This changed, however, as the Empire matured, large battles decreased in frequency and the emphasis shifted from defense to internal security. Cavalry often acted independently as a reaction force to suppress border raids and local rebellions while the infantry stayed behind to serve as garrison troops or a constabulary. It would prove extremely difficult to rejoin these elements once they had grown apart—especially as the Empire began to decline. European invaders were all too eager to exploit this problem.

Babur and Akbar were at the forefront of the artillery revolution, but that competitive edge would not be maintained. By last half of the 17\textsuperscript{th} century Mughal artillery was inferior in quality to even that of Asian rivals like the Safavids. A number of contemporary European observers commented on its poor performance. One of the most serious problems was a deficiency in Indian foundry technology. Native gun founders were unable to pour and cast metal in sufficient quantities to form an entire large cannon—the guns either had to be made in parts or the mold had to be filled in several pours. Either technique produced a weapon weaker and less durable than one made as a single piece. These difficulties also precluded the mass production of cast iron guns—a key
development in the growth of the massive European artillery arsenals of the late 17th century and beyond.

Fortifications were also important in Indian warfare. Akbar launched a major program of fort construction in the early portion of his reign, when the borders of his Empire were still at risk. Many of his enemies also placed their faith in stone walls. There was no revolution, however, in fortress design. The so-called "Italian style" was never widely adopted. There are a number of reasons for this omission. The traditional stone forts of India were quite different from the typical European medieval castle. Even before the advent of gunpowder they were massively over engineered, with walls as thick as 60 feet. They were often constructed in a sort of wedding cake design, with concentric layers of progressively higher walls designed to contain breaches. There were no outworks, but many of the forts included moats with a rudimentary counterscarp and glacis. In rugged areas like Rajasthan and the Deccan, fortresses could be placed atop commanding heights that were not easily bypassed. This made effective siege gunnery especially difficult. Some concessions were made to gunpowder. New and retrofitted forts included emplacements for defensive guns, exterior earthworks and even thick stands of bamboo and thorn bushes designed to retard the progress of both cannonballs and advancing infantry. The traditional Indian stone fortress was remarkably resistant to artillery. A number of these installations held out for months against the fearsome Mughal siege train. Even the British field artillery of the late 19th century had difficulty making an impression on such defenses. 59
There were other reasons for the lack of innovation in this area. For most of its existence the Empire never faced a serious threat of invasion. Its armed forces had two primary missions—to expand and secure the frontiers and to keep the peace within those frontiers. The greatest potential danger to their home territory was civil war, not the actions of a foreign power. An “obsolete” stone fortress was perfectly adequate to project Imperial power and to repel any typical threats—pirates, border raiders, brigands or local rebels. At the same time it could still be overcome by a sufficient weight of heavy artillery—a commodity on which the central government held a near-total monopoly. A brand new Vauban fortress would be more than just an expensive indulgence—it might also be a dangerous temptation for an over-ambitious governor or prince. Finally, the sheer size of Indian armies eventually made fortifications less important. As Geoffrey Parker notes in his comments on the vast legions of the Napoleonic Wars, “Armies were now so mighty that there were enough men to allow commanders to encircle the enemy’s strategic fortresses, to defend their own, and yet still be able to lead forces of unprecedented size into the field.”

The Mughals fielded a large navy, but that force did not conform to the Mahanian ideal of the mature Western military revolution. Instead of pursuing the far reaching “command of the seas” so coveted by Northern European nations the Empire established a system more reminiscent of the early modern Mediterranean order. The emphasis was on littoral and riverine warfare. Fleets of war galleys were the primary striking force. The Mughals focused on points instead of lines, controlling ports and other strategic locations instead of
patrolling the open sea-lanes. Their operations involved close cooperation between ships, land forces and fortifications. While this system might appear regressive or primitive to outside observers—it persisted for a century after the decline of its European counterpart—it adequately served the needs of the state. The Mughals had no plans to acquire overseas colonies. Sea borne trade only accounted for a small fraction of their economy. India was so wealthy and rich in natural resources and manpower that the Empire did not have to look abroad for vital commodities. The only items that had to be imported in bulk were horses and precious metals. The latter was obtained with little difficulty. Foreign demand for Indian goods kept specie flowing into the economy. Outsiders could do little to dictate the terms of trade to the Empire if they wanted to maintain access to its markets. In the end a blue water navy was a luxury, not a necessity.

Technological issues also precluded the creation of an overseas fleet. The Mughal navy was constrained by the inability to manufacture cast iron cannon in quantity. As Guilmartin observes in *Gunpowder and Galleys*, the wide availability of inexpensive iron guns was crucial to the development of a more "advanced" European system: "If entire fleets of broadside sailing ships capable of exercising command of the seas in the Mahanian sense could have been built and armed, the situation would have been different. But they could not. Until the advent of cast iron... there were simply not enough cannon available. The expense was too great... command of the sea was not truly possible for a nation which relied solely upon bronze cannon." 61
The diverse nature of the Mughal military did promote a community of arms in which professional soldiers of varied backgrounds exchanged information and expertise. A Mongol could share his insights on cavalry tactics, and a Turk might discuss field fortifications while a Rajput explained the essentials of guerrilla warfare and counterinsurgency. The Mughals also took an active interest in military developments elsewhere in the world. A European observer who accompanied Akbar on campaign overheard the Emperor and his staff discussing and analyzing the battle of Alcazar al Kabir, fought in North Africa by Portuguese and Moroccan forces. The Mughals—and all of India—were enmeshed in a vast global web of military thought and innovation. The devices and tactics introduced by Babur, for example, could be traced back through Persia and Anatolia all the way to Central Europe. Akbar continued to adopt foreign technology and practices that he considered useful. In the later Empire, however, this curiosity was stifled by a growing conservatism. The Mughals continued to retain foreign technical and military experts, but they acted more as mechanics and hired hands than true advisors. By the latter portion of the 17th century the military state of the art in the Mughal Empire had declined from a condition of parity with the West to a clear deficit.

Why did the Mughal military revolution remain unfinished? In the most basic sense, the Empire was literally too successful for its own good. For much of its history it never had to confront a truly existential threat. Unlike contemporary European powers, its survival did not rest on continued innovation and adaptation. For almost a century—from the conclusion of Akbar's campaigns of
expansion and consolidation to the rise of Aurangzeb and the outbreak of the Deccan wars—the citizens of the Empire enjoyed nearly uninterrupted peace and prosperity. Minor wars went on constantly, but those were largely confined to the frontiers and had little impact on civilian life in the interior. There were no Indian equivalents of the Italian Wars or the Thirty Years War. Rebellions were not uncommon, but they were small and localized. The most serious internal conflicts were the succession battles following the death of an Emperor. These were violent but brief—nothing like the prolonged, mortal struggles of the English Civil War or the French Wars of Religion. The conflicts revolved around personalities and not ideologies, and they did not leave permanent factions in their wake. Most supporters of the losing side eventually accepted the verdict and moved on. The Akbari Constitution remained in force.

The Mughals were especially secure because of their commanding geographical position. The traditional narrative of Indian history is one of invasions. This leads to the false impression that India is particularly vulnerable to conquest from without. Nothing could be further from the truth. India is a fortress, protected by truly formidable natural ramparts. Trackless jungle and malarial swamps guard the eastern frontiers. The first force to attempt a full-scale invasion of India from that direction was the Imperial Japanese Army during World War II. The results were less than rewarding. The western approaches are blocked by some of the most forbidding deserts in the world. That route has only been successfully completed twice—at great cost and with substantial naval support—by the Arab invaders of Sind and by Alexander the Great, on his way
out of India. The “traditional” routes through the Himalayas are also fraught with peril. They require long supply lines through the hostile terrain of Central Asia and Afghanistan. Staging forces of any size in these regions is extremely difficult, even without interference from the exceedingly warlike inhabitants. The problems are complicated further if the defending power has established a defense in depth by holding bases in the area. While the heartland of India is very easy to hold and consolidate, its natural borders are equally easy to defend.

Any invasion of India must in effect be run on a shoestring—the physical and logistical barriers make the introduction of a truly overwhelming force almost impossible. The only real chances for success occur if the country is divided up into many smaller states that can be defeated in detail—or if the dominant power is left indisposed by rebellion, natural disasters or other misfortune. Babur took advantage of just such an opportunity by attacking the Afghan rulers of Northern India while they were distracted by internal conflict. The Persian and Afghan invasions of India during the 17th century succeeded only because the Empire was already in the final stages of decline. While the Mughals were at the height of their powers, there was no regional state that could challenge them. There were only a few nations on Earth that could match their military might, and all of those were far away. Conquest from the sea was not a credible threat within the limits of 16th and 17th century naval technology. The combined logistical and seaift capacity of all the great European powers combined would be insufficient to support a successful invasion of India. When the Empire finally fell, doom
came not from the sea but from within. The Mughals were crippled by the actions of inept leaders and internal factions, not the schemes of foreign powers.

This security and absence of competition eventually led to a culture of conservatism. New inventions were no longer embraced eagerly. Even items as useful as the flintlock and the socket bayonet—or civilian innovations like the printing press—were not widely adopted. Existing and obsolete systems and practices were kept in place as long as they were sufficient for the task at hand. Pursuit of the best was replaced by acceptance of the good enough. It is a common adage in the business world that companies that pioneer a new product or industry tend to gradually fall behind the curve, resting on their initial success and becoming less competitive over time. The Mughals came to embody this cliché. Ironically they regressed during their Golden Age while Western powers improved themselves by stumbling from crisis to crisis. Most European states of the era existed in a constant state of emergency. In many instances the choice was between excellence and extinction. By contrast the Mughals enjoyed uninterrupted safety and prosperity—but there could be no continued advancement without constant insecurity and challenges.

There was worse yet to come. The Mughal Empire had dedicated its last two centuries of existence to suppressing all rivals. It had actually achieved what contemporary European dynasties like the Habsburgs or Valois could only fantasize about—total domination of its region. When that system finally failed there was nothing left to replace it. India had been hollowed out. The decline of a European power like Spain was a local disaster. The fall of the Mughals was near
apocalyptic—disaster on a continental scale. Jared Diamond, writing about another vast Asian empire, explains these differing outcomes. "Europe's barriers were sufficient to prevent political unification, but insufficient to halt the spread of technology and ideas. There has never been one despot who could turn off the tap for all of Europe, as of China... The real problem in understanding China's loss of political and technological pre-eminence to Europe is to understand China's chronic unity and Europe's chronic disunity." 63

In Europe the military revolution was not brought to its conclusion by a single state. It proceeded more like a relay race. As Spain and Portugal declined the movement's momentum passed on to the Netherlands and the Baltic and then continued into England and France. States often advanced themselves by improving on the innovations of their enemies. After the fall of the Mughals there was no obvious successor to carry on the Indian military revolution. The political landscape of the subcontinent resembled that of 5th century Europe after the fall of Rome, with a number of lesser powers competing for the scraps of empire.

The Mughals' former vassals and enemies—Afghans, Marathas, Sikhs, and Deccanis—continually fought amongst themselves. A number of these states did begin to adopt Western military technology and tactics. They would eventually prove to be formidable foes for the British—much more dangerous than the hapless remnants of the Mughals. Yet one particularly unfortunate development would set their accomplishments back by decades. The Afghan warlord Ahmad Shah Durrani launched a series of invasions into India, inflicting severe defeats on the Sikhs, Marathas and other regional powers. On one particularly horrific
occasion, the third battle of Panipat, the Afghans nearly annihilated the main Maratha field army, inflicting casualties comparable to the British losses on the first day of the Somme. \(^6^4\) Ahmad Shah, however, did not build on his victories and take his place as the logical successor to Babur and Akbar. Instead he withdrew to Afghanistan, leaving much of northern India a wasteland in his wake. It was into this vacuum that the British East India Company expanded.

If European intervention had been postponed for a while, the native states might have recovered from this catastrophe and resumed India’s military revolution. Through constant competition and conflict they might have driven each other to excel and expand—militarily, politically and economically. That was not to be. India had run out of time. It might be argued that India’s loss and Europe’s gain was simply a matter of timing—of contingency. Imagine Western Europe’s fate if the Vikings, Saracens or Mongols had arrived just a few decades after Rome’s fall. During India’s greatest moment of uncertainty and crisis there were external aggressors poised and ready to strike. There was no one left to wield the power of the Mughals—or to continue Babur and Akbar’s legacy of excellence and innovation. The Indian military revolution would remain unfinished.

This unhappy ending has led many to assume that the Mughal Empire was a failure—that it was inherently inferior to the other great powers of the time. Yet can any system that endured for more than two centuries truly be considered defective? Should Rome be written off just because of what happened in the 5\(^{th}\) century? Certainly states and empires are no less mortal than any other complex
organisms. The Mughal Empire actually followed a very similar trajectory to that of some of its Western counterparts. Just like the ascent, its downfall was eerily similar to that of Spain. The same flaws—complacency, poor leadership, political and economic mismanagement, factionalism and religious intolerance—eventually hobbled both empires. Spain was afflicted by a terrible, decades-long war of attrition in the Low Countries that drained its treasury, manpower and—most tellingly—the goodwill of its subjects. The Mughals found a similar quagmire in the Deccan. A crippled Mughal Empire was eventually dragged down both by foreign aggressors and its own rebellious provinces. Similar disasters struck Spain. At the start of the 18th century a newer generation of European power brokers fought a continent-wide war for the right to become Spain’s patron. During the Napoleonic wars it endured invasion, civil war and the rule of a puppet monarch. It would lose most of its overseas empire shortly thereafter. Only the delicate military and diplomatic balance between other European states prevented Spain from becoming a colony itself.

As Spain imploded and British forces continued to dismantle the remnants of the Mughal state, a number of the other countries that had pioneered the European military revolution—Venice, Portugal, and the Netherlands among them—were also sliding to the status of second and third rate powers. Western leaders proved to be no more immune to the consequences of arrogance, misjudgment and inflexibility than anyone else. If these states were judged by the same harsh standard applied to the Mughal Empire they could very well be demoted to the ranks of failed “gunpowder empires.” Perhaps a better solution
would be to reassess the legacy of Babur and Akbar and to fully appreciate their roles in India's military revolution.

2. James 41

3. James 56 (quoting the colonial British anthropologist James Forbes)

4. See Gommans, Jos. *Mughal Warfare*. (New York: Routledge, 2002). Gommans discusses the amount of manpower available to the Mughals in Chapter 3. He quotes Abu Fazl's Ain-I-Akbari, which estimated the existence 4.4 million potential soldiers in India who had access to at least basic arms and training—4 million infantry and 400,000 cavalry. Obviously all of these men were not actually in Imperial service. The regular Mughal army of that era had access—on paper at least—to over 150,00 cavalrymen alone. Under Aurangzeb, field armies of about 200,000 would be deployed in the Deccan.


8. Babur owned a special suit of "Qalmaqi" armor made of joined metal plates. The exact type is unclear, but it was sturdy enough to save him from potentially fatal arrow wounds on at least one occasion. See Babur 150.

9. Commans 161


11. Babur 121

12. Babur 161

13. Babur 246. The surname "Serpuli" may indicate that his heroic deeds took place at the battle of Sar-I-Pul.

14. This battle is described in Babur 252 – 253.

15. See Haidar, Mirza Muhammad. The Tarikh-I-Rashidi. Trans. E. Denison Ross (New Delhi: Renaissance, 1986). Mirza describes how the chieftain Mirza Abu Bakr raised a large force of volunteer soldiers and issued them horses and armor. He mentions at length the very poor horsemanship of most of the recruits—mainly peasants and craftsmen. It is almost certain that these men would have had to dismount when fighting. It is unclear whether or not the use of mounted infantry on this scale was typical or simply an expedient at a time of crisis—Abu Bakr was facing an invasion of his home territory at the time. See 322 – 323.

16. Babur 128


18. It is unclear exactly how much ammunition the typical horse archer carried. Contemporary illustrations show cavalymen carrying from as few as 6-8 arrows to more than 20. A European observer of Chingiz Khan’s army noted that his troopers were expected to carry “three large quivers full of arrows.” See Chaliand, Gerard. The Art of War in World History (Berkeley: University of California, 1994) p. 465 – 474. Babur at one point mentions counting about 20 arrows in his quiver—and this was after a
fight in which he had probably already expended at least several more. See Babur 152.


22. Babur describes Afghan tribesmen who made rude gestures when shot at, thinking the guns to be harmless noisemakers. They soon learned otherwise. See Babur 270.

23. Khan discusses early Mughal artillery in Chapters 3 and 4 of Gunpowder and Firearms. My estimate of the sizes of Babur’s artillery is based on Haidar Mirza’s description of similar guns used by Humayun at Kanauj. See Haidar Mirza 474.


25. For a description of this incident see Babur 322.


27. Babur 125

28. Babur 259

29. Babur 326

30. Babur 382

31. Babur 382
32. Babur 382

33. Babur 384 – 5
34. Haidar Mirza recorded his eyewitness account of the fiasco at Kanauj. See p. 471 – 477.


37. Monserrate 200 – 201

38. John F. Richards is one of these. In *The Mughal Empire* (New York: Cambridge University, 2004), he cites a recently published forensic analysis of Akbar’s ‘symptoms’ as described in the primary sources.

39. See Chapter 5 of Gommans and especially Chapter 4 of Khan’s *Gunpowder and Firearms* for a more detailed description and analysis of development in Mughal artillery.

40. A detailed discussion of Indian rocketry can be found in Khan, *Gunpowder and Firearms* 22 – 30.


42. Developments in small arms are covered in Chapter 5 of Gommans and Chapter 5 of Khan’s *Gunpowder and Firearms*. Gommans provides an especially detailed description of the design and function of the Mughal musket on p. 150 – 155.

44. Gommans discusses the role of elephants in Chapter 4, especially p. 121 – 126. Monserrate notes the secondary role of elephants in the Mughal battle array. See p. 140.

45. See Orr, W.G. "Armed Religious Ascetics in Northern India." *Warfare and Weaponry in South Asia.* Ed. Jos Gommans and Dirk Kolff (New Delhi: Oxford, 2001) 185 – 201for descriptions of a number of odd weapons devised by mercenary and guerrilla groups, including one that seemed to resemble the *Panzerfaust* of German World War II fame. It launched a huge metal spear point from a tube of explosive propellant. It is unclear whether this weapon really was a primitive version of the man portable rocket launcher—if the warhead had its own independent propulsion—or if it functioned more like a harpoon gun. Some of the more standard Indian rockets had—seemingly redundant—blades or spear points attached to their propellant tubes. Akbar had his own share of strange weapons. Abu Fazl describes a device reminiscent of the German *nebelwerfer*—an array of 17 cannon rigged to fire from a single fuse. See *Ain-i-Akbari* p. 112. Several later Mughal forts had cannon mounted on revolving turntables. It is unclear, however, when they were installed and if the work was done by the Mughals or the forts' previous owners. See Khan, *Gunpowder and Firearms* p. 110.

46. Abu Fazl states that 1000 gladiators were stationed in the royal palace. He claims there were 100,000 more of them around the Empire, but he does not specify what roles they served in the military. The palace gladiators apparently did live up to their names on occasion. Monserrate describes a large arena in Fatehpur Sikri that hosted mock combats, polo matches, elephant fights and public executions. See p. 30 – 31.

47. *Ain-i-Akbari* 112


49. Gommans 92 – 93


51. Monserrate 79
52. Tukaroi is described in the Akbarnama, Volume 3, sections 122 – 126 and Haldighati in Volume 3, sections 173 – 176.

53. The great sieges are described in Akbarnama Volume 2, sections 314 – 339.

54. According to Abu Fazi there were roughly 150,00 cavalry in the mansabdari contingents and about 75,000 infantry and an unspecified number of cavalry in the replacement pool. There were 12,000 musketeers in the royal guard and at least that many cavalry. "Gladiators," mercenaries, local militia units and auxiliaries could be added to these numbers. Monserrate accompanied a Mughal field army that was reportedly composed of 50,000 cavalry and an unspecified but even larger number of infantry. See Monserrate 83.

55. Hall, Bert S. Weapons and Warfare in Renaissance Europe: Gunpowder, Technology and Tactics (Baltimore: Johns Hopkins University, 1997) 124


58. Barua, Pradeep. The State at War in South Asia (Lincoln: University of Nebraska, 2005) 74


62. Monserrate 154 –155

64. See Barua 59 – 66 for a chilling description of this disaster.
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