Warfare in Pre-British India – 1500 BCE to 1740 CE

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Preface

This book deals with the pre-1700 era. And at that time, India was coterminous with South Asia. Hence, both these terms have been used interchangeably in this monograph. Despite the fact that armies consumed the largest amount of revenue of the state and were the biggest government employer till 1947, our understanding of pre-modern (read pre-British) warfare in the subcontinent is nebulous. For ideological and political reasons military history is not the 'in thing' within South Asia's history circuit. There has been a lot of interest among the general public and also among academicians about the recent India–Pakistan flare-up, but study of history of warfare before the eighteenth century remains marginal. Some British and American historians including this author have tried to understand the linkages between the rise of British Empire in India and the East India Company's military success against the 'Mughal successor states' from the late eighteenth century onwards. However, as one moves further back in Indian history, our understanding of warfare remains an uncharted area. This is partly due to paucity of sources. For the British era, a researcher gets documents stacked which are easily traceable in the archives of Britain and India. In contrast, sources about pre-1700 India are scattered in various libraries and, worse, they are in different languages. And not all of them are translated into English. In fact, the dilemma before a historian working on the pre-eighteenth-century era is whether he/she is to become a linguist and concentrate on learning different languages or the scholar has to go for learning methodologies in order to interpret the diverse sources for reconstructing a historical account. Besides English, this author can handle Sanskrit, Assami, Bengali, Hindi and Marathi, but not Persian, Urdu and the other regional languages. Hence, on several cases, I have to depend on translated versions. I acknowledge this limitation while writing this volume. Further, in this age of political correctness, if one attempts to analyse the 'Aryan' invasion against the Dravidians, then the South Indians of present-day India might get offended. And if one takes up the pen to study Islamic steppe nomadic invasions, then there is the danger of stoking communal troubles and *Hindutva* feelings. Studying Islamic intrusion in medieval India as part of the Asian context (which is attempted in this monograph) might go against the dominant

interpretation within India that the Mughal Empire was a unique polity characterized by Hindu-Muslim synthesis. This is not to suggest that the Mughal Empire was a communal/Muslim polity. Similarly, the invasion of Sri Lanka by the Tamils during the early medieval era is bound to have repercussion on present-day Hindu Tamil separatist struggle versus Buddhist Ceylonese nationalist attitude. Nevertheless, I feel that a scholar's duty is not to go by current political concerns but to understand the past as it was. Overall, this volume takes a *longue durée* perspective and attempts a cross-cultural analysis. However, it is not merely a textbook. Our historical account is sprinkled with a lot of primary sources. Though the volume follows a linear chronological narrative account, its analytical content is heightened by trying to analyze military affairs through several heuristic devices.

Kaushik Roy
Kolkata 2014

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First of all, thanks to my friend Peter Lorge who showed interest in this project. Mr Peter Sowden of Routledge also deserves praise for sustaining this book project. And of course Helena Hurd, who tolerated my repeated failure to keep the schedule. I am also grateful to my student Moumita and my ex-students Pratyay and Dipanjan for providing me with some of the obscure sources. I remember the pleasant trip to Amsterdam in 2011 when Professor Dirk Kolff kindly and affectionately provided photocopies of some old journal articles. It goes without saying that the responsibility for all the faults is mine alone. I have written this book on the assumption that its very limitations will encourage someone to write a better volume on this topic. Lastly, I do not know how to thank someone without whom neither writing nor teaching would have been possible. I hope she understands.

Kaushik Roy
Kolkata 2014

Abbreviations

C3I	command, control, communications and intelligence
EIC	East India Company
GDP	gross domestic product
LOC	line of communication
MBT	main battle tank
MTR	Military Technical Revolution/Military Technological Revolution
ORBAT	order of battle
RMA	Revolution in Military Affairs
RNA	Revolution in Naval Affairs

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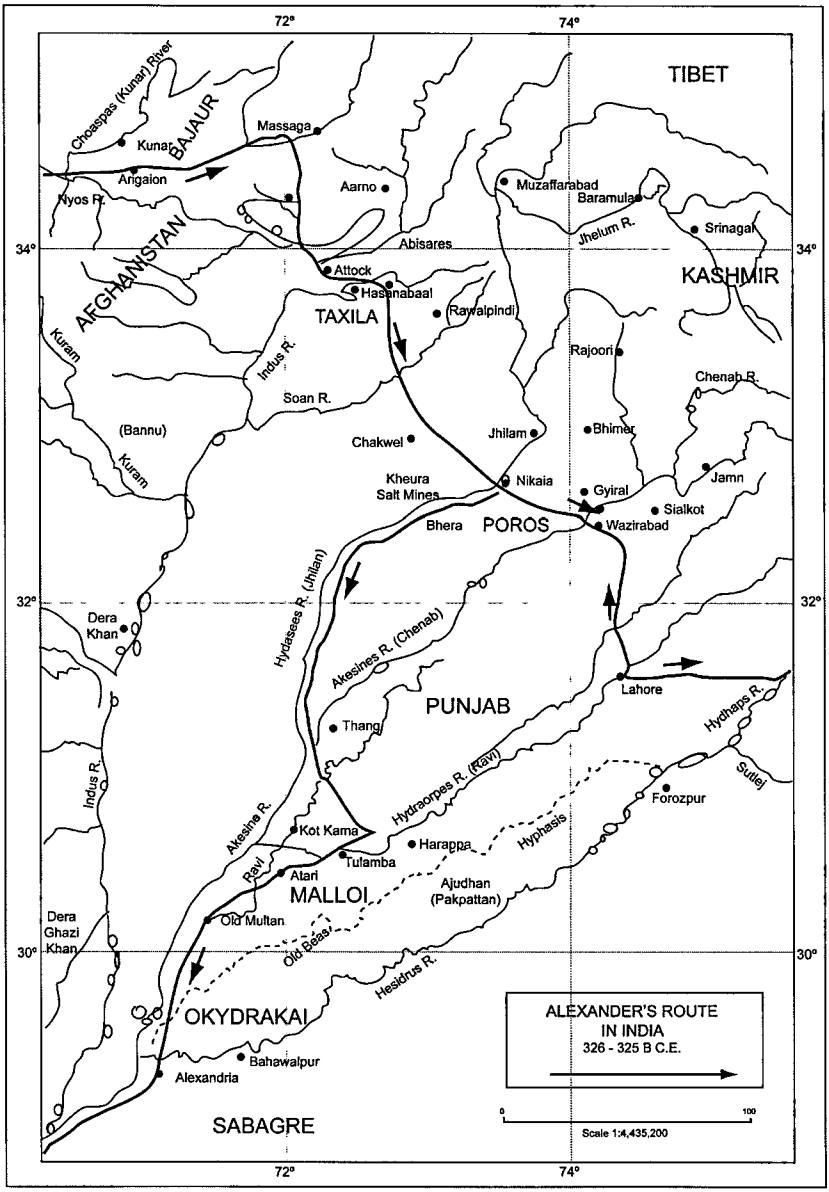

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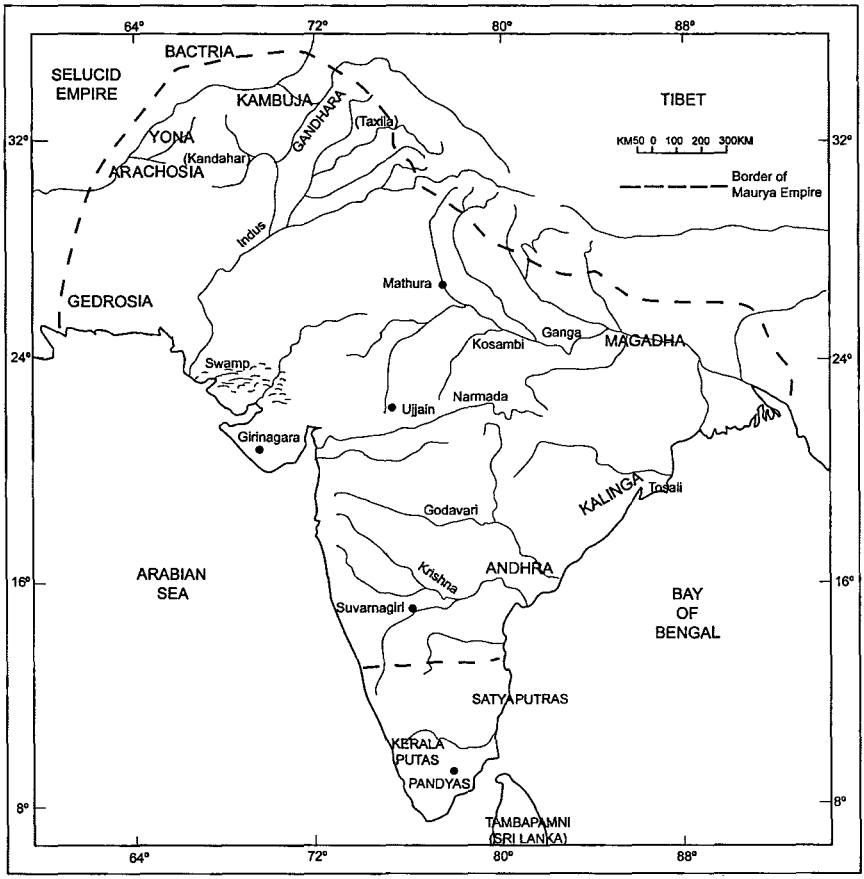

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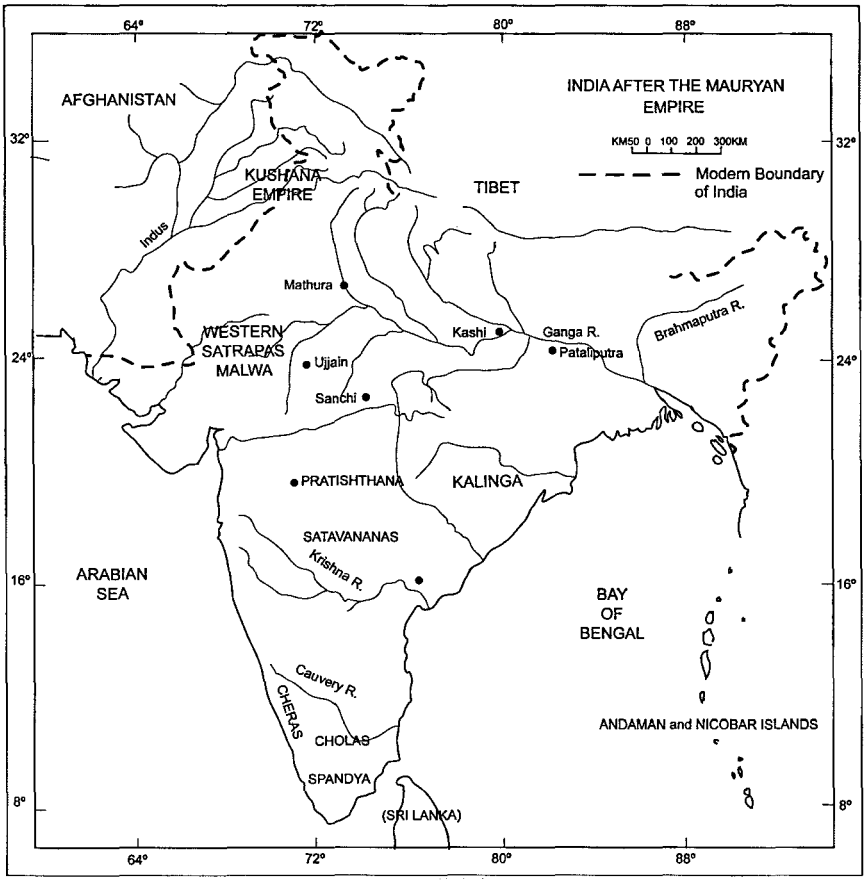

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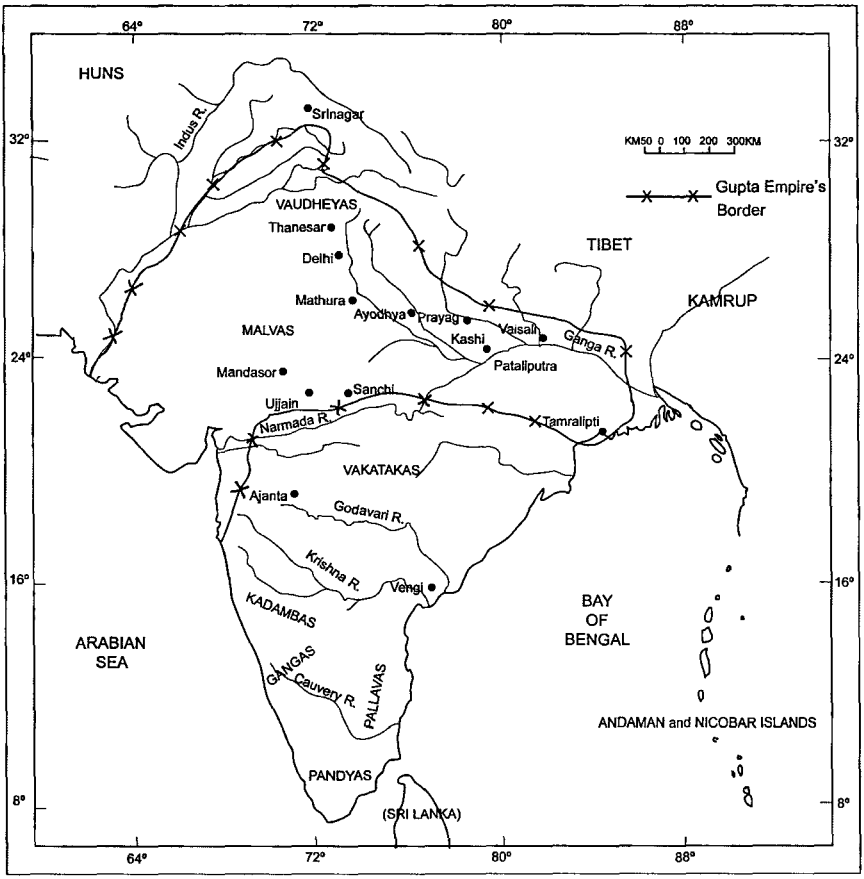

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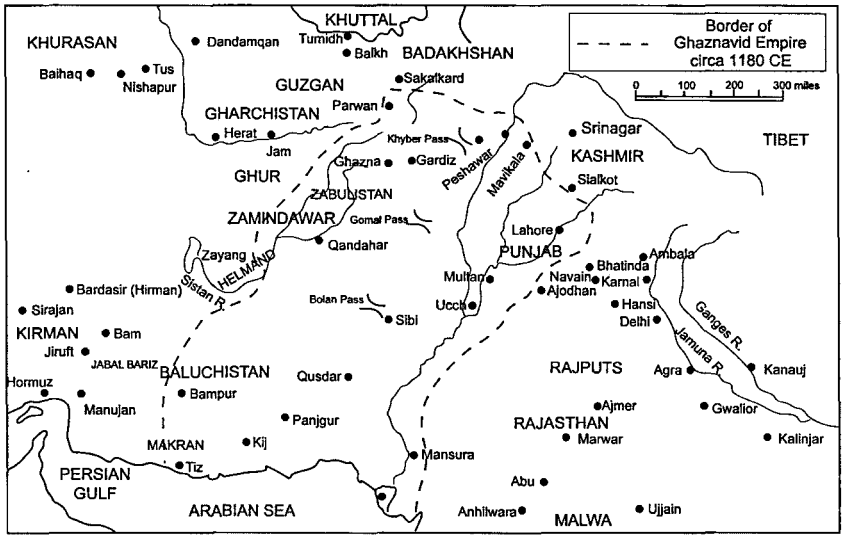

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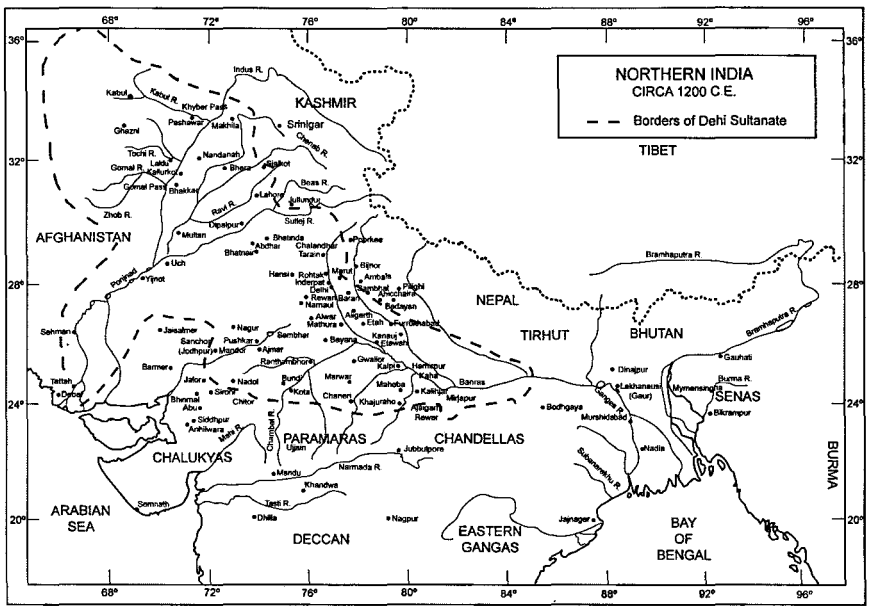

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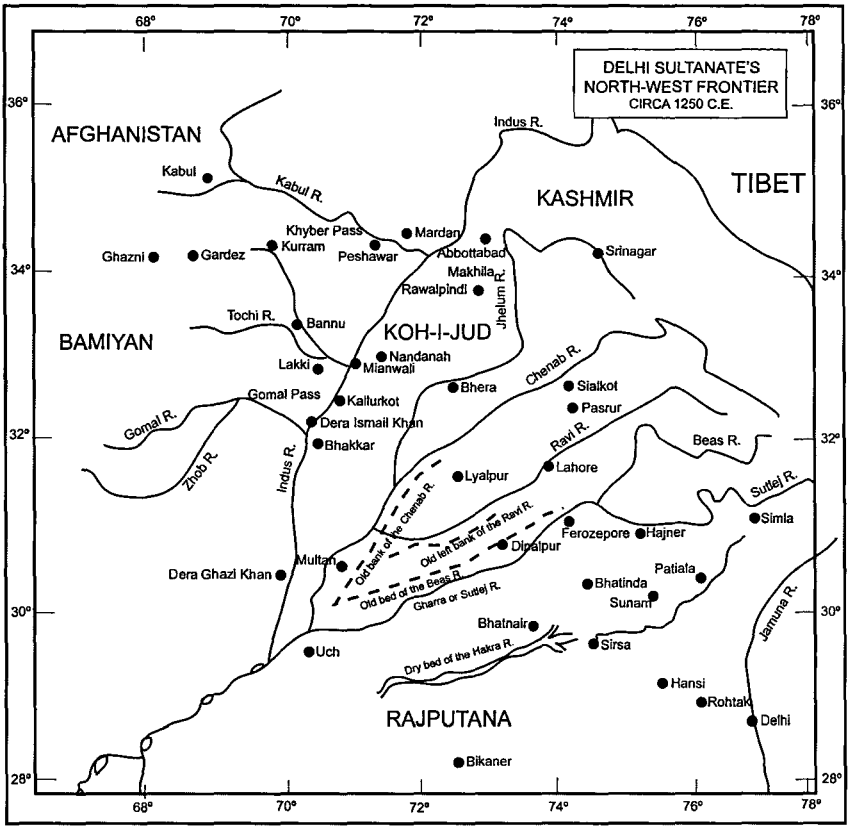

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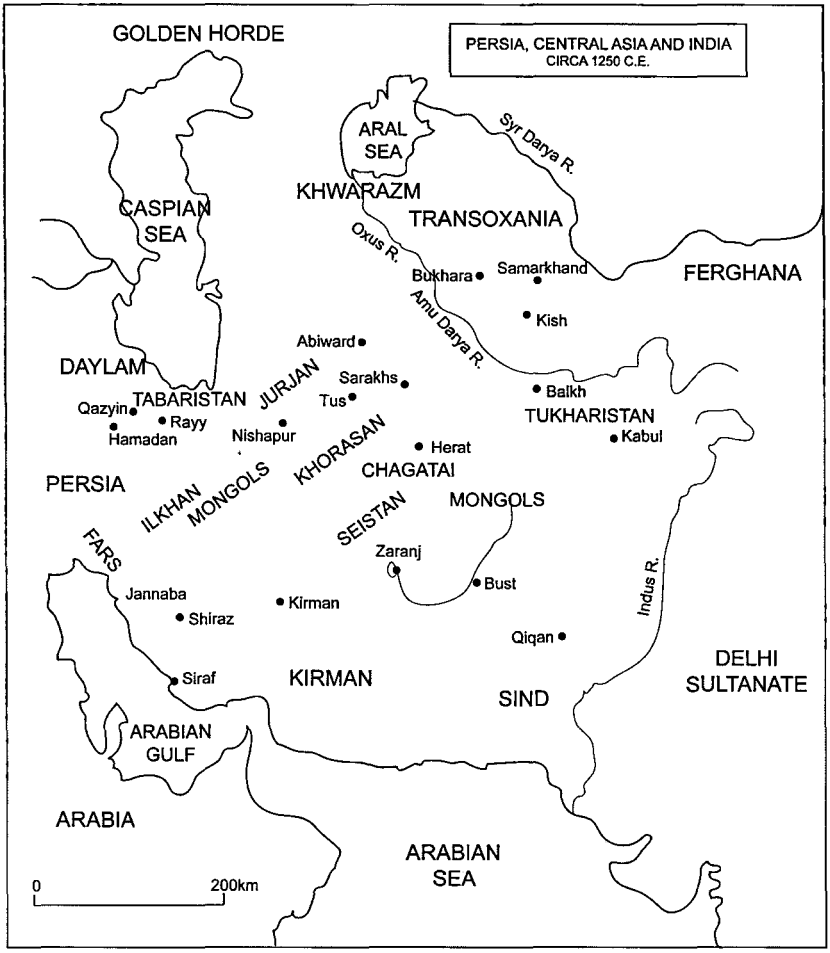

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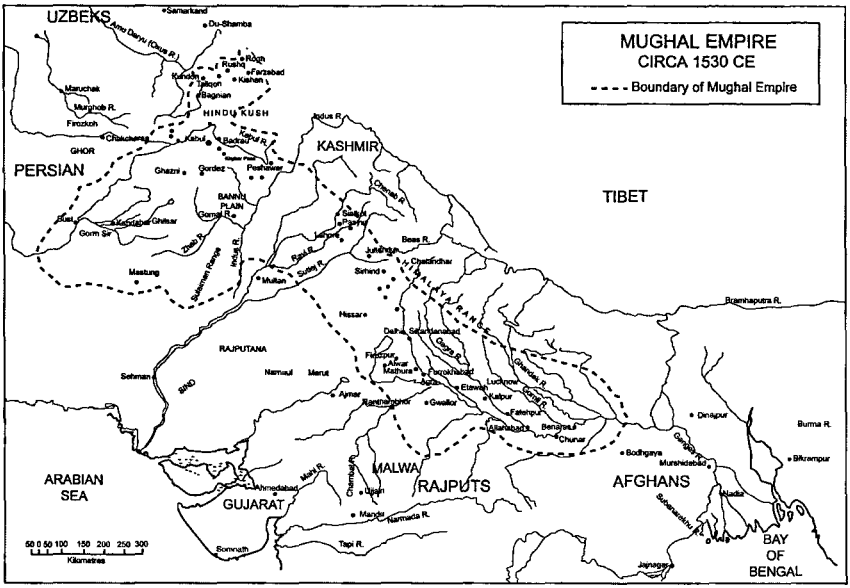

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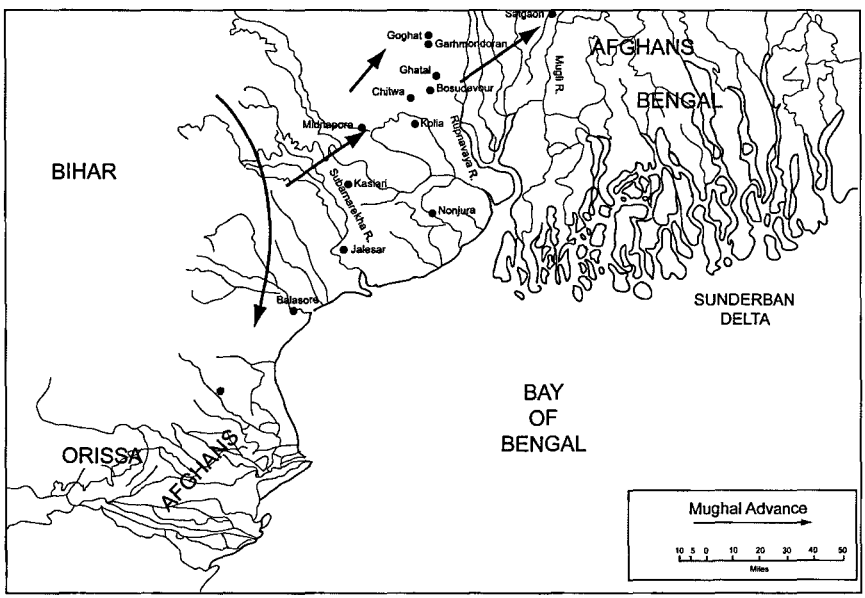

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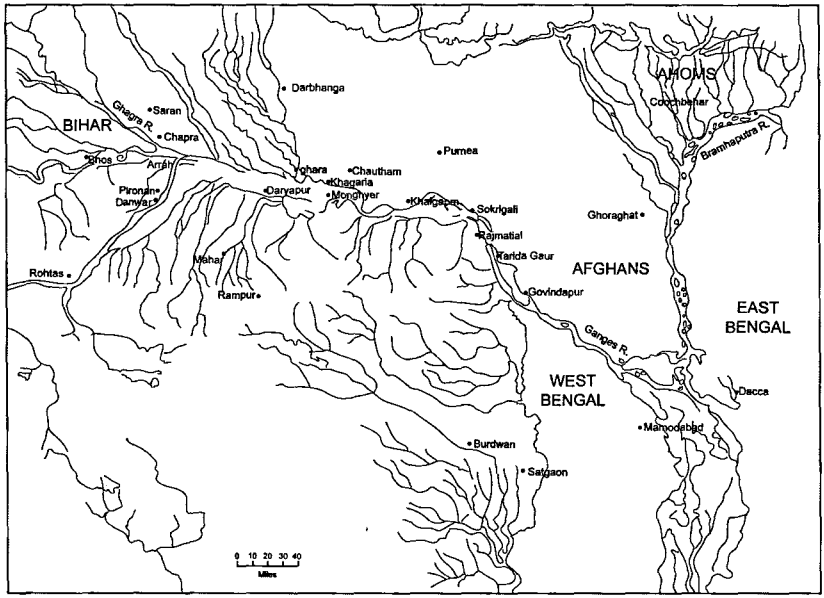

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Introduction

Warfare in pre-modern South Asia in the Eurasian context: 1500 BCE–1700 CE

This volume deals with warfare in South Asia during the pre-British era. We are assuming that the onset of the colonial British rule ushered in Western modernity in the Indian subcontinent. This monograph starts around circa 1500 BCE, i.e. when the era of recorded history begins. And our story ends around circa 1740 with the actual collapse of the Mughal Empire and the beginning of the post-Mughal successor states era. Post-1740 South Asia also witnessed the rise of British East India Company (EIC). Hence one can roughly take circa 1740 as the beginning of colonial rule. South Asia is a recent term which has been coined in the post-World-War-II era by the US State Department officials. The bulk of the attention in this book is given to undivided India (which includes India, Pakistan and Bangladesh). This is natural because, in terms of economic resources and demographic assets, these three countries dominate the geographical region. The traditional name for the subcontinent is India (as used by the British), which is derived from the medieval Arabic term *al-Hind*. The latter is a corruption of the term Sind.[1] *Al-Hind* is later vulgarized as Indostan or Hindustan. The Classical Greek authors also used the term *Indika* to refer to the region east of the River Indus, or more precisely the region east of Afghanistan.

There are several possible approaches to analyse military history on a *longue durée* perspective. One is the War and Society approach which became common in the 1960s and the 1970s. In the case of Indian military history, the foremost book following this approach is Stephen Peter Rosen's *Societies and Military Power* published in 1996. It deals with the impact of caste on military organization. Rosen asserts that armed forces are reflections of their host societies. He writes that the divisive caste system prevented any unity among the various social communities. Lack of social cohesion resulted in disunity in the armed forces of India. The result was successive defeats of the internally fragmented Indian armies in the hands of the external invaders throughout history.[2] In an article, Rosen emphasizes: 'the social divisions created by dominant social structures carried over into the military organizations with consequences for the military power of those organizations'.[3] Society definitely shapes force structure, but Rosen overestimates the adverse impact of caste system on the military organizations. Further, we will see that pre-modern

Indian history is not merely a catalogue of defeats. The combat effectiveness of the Indian armies at times had been quite impressive.

Besides the social determinist approach, we also have a cultural determinist framework. From the 1990s, 'cultural studies' is the 'in thing' in the history circuit. Some authors' taking the Culturalist approach to the ultimate extent shows that battles and campaigns cannot be reconstructed. All events seem to be the product of fertile imaginations of the historians from 'tainted' sources.[4] This volume reconstructs several battles in the context of pre-modern South Asia and argues that a coherent picture of the battlefield can be reconstructed from diverse sources.

Most of the Western scholars influenced by the Culturalist approach argue that warfare in pre-British India involved skirmishes by the armed rabbles. Intrigues and treacheries resulting in mass desertions and political negotiations rather than decisive set piece battles and sieges decided the outcomes. This was because of weak state structure, divisive social fabric and the peculiar cultural ethos of India. In accordance with this line of argument, pre-British India lacked the concept of a strong state. India's political culture did not have the concept of a ruler enjoying a monopoly over armed forces in his realm. Multiple layers of sovereignty/shared sovereignty characterized pre-modern India's political culture. Frontiers fluctuated frequently, and the reach of the state was limited. This was partly because of the Hindu concept of *dharma* and the Islamic concept of *fitna*. *Dharma* and *fitna* resulted in *bheda* (divide and rule), and the fourfold caste system of Hindu society caused fragmentation of political authority. The net result was continuous private warfare among the numerous small war bands led by the powerbrokers within the subcontinent. All these resulted in stagnation in the techniques and technology of warfare in the subcontinent. It was only in the eighteenth century, claims the dominant historical interpretation, that the British established a strong polity, a demilitarized society and an armed force capable of conducting decisive battles and sieges. The principal causative factor in this approach, i.e. political culture, is actually a modification of the racial incapability of the Indians as propounded by the colonial scholars during the late nineteenth century. The British scholars and officers writing on Indian history during the heyday of colonialism argued that racial incapability of the Indians in particular and the Asians in general prevented them from constructing rationally bureaucratic, hierarchically organized military forces. Rather, treachery, subterfuge and deceit inherent in the Asian/Indian character prevented the emergence of centralized states and bureaucratic military force in the non-Western regions. In the present age of political correctness, racial incapability of the Asians/Indians has been transformed as a case of cultural uniqueness of the Indians.[5]

In the framework of the Culturalists, the global (or more precisely Eurasia) military culture is divided into two bipolar entities: the Western Way of Warfare versus the non-Western/Eastern Way of Warfare. One finds echo of the Herodotean division of the world into Orient versus the Occident

(Greeks). The different cultures of Asia and even East Europe are merged into the single non-Western Way of Warfare in this approach. The proponents of this view argue that the unique political and military culture of the West gave birth to the Western Way of Warfare. It is characterized by a focus on decisive battles geared to the destruction of the enemy force and close-quarter combat till the bitter end. Throughout history, runs the argument, the Western Way of Warfare has been updated due to the focus on technology and military theory. The origin of the Western Way of Warfare is traced back to Classical Greece. In contrast to the Western Way of Warfare, the non-Western Way of Warfare, which is the product of Asian states' political culture, is characterized by treachery, deception, subterfuge and harassing tactics rather than on battles. Technical developments in the case of the non-Western Way of Warfare throughout history have been inhibited due to overemphasis on religious aspects.[6] Somewhat influenced by this approach, some Indian scholars assert that there is a unique Indian Way of Warfare, influenced by ancient India's Classical Sanskrit heritage. They note that the two epics (*Ramayana* and *Mahabharata*) along with the *vedas* have been responsible for the Indian paradigm of warfare.[7] It is interesting that the influence of Islam and the steppe nomadic influence are completely disregarded in this paradigm. Further, the Way of Warfare approach (be it Western or non-Western) mostly regards a country's military culture as frozen in time, as the essential cultural ingredients from the ancient past have already structured its evolution.

In recent times, the Culturalist approach is getting more nuanced. While the Cultural Studies approach is becoming fashionable among historians, security studies experts use the Strategic Culture and Organizational Culture approaches. These two approaches are derivatives of the broader cultural determinist framework. The Strategic Culture approach is actually a Way of Warfare interpretation in a new package. A British security analyst Christopher Coker accepts the bipolar division of the Western and Asian Way of Warfare.[8] The Organizational Culture approach meshes the cultural aspect with the organizational theory. The Organizational Culture approach argues that some of the organizations empower individuals and stimulate innovations in matters military while control culture discourages innovations.[9] In general, scholars following the Culturalist approach show the varying impact of culture on the force structure and performance of the military organization in a particular time at a particular region. Overall, the Culturalist approach fails to come up with a framework which can explain changes in the military organization.

Technology is a crucial driver in world history. We have some crude technological determinist studies as far as global military history is concerned.[10] In the Indian case, a technological determinist approach is followed by G.N. Pant, but it is neglected by the mainstream historians working on Indian history.[11] The revolution in the technological approach to military history writing is brought by Geoffrey Parker's introduction of the concept of Military Revolution. Later, other historians modified and expanded the concept of

Military Revolution. Parker harps on technological changes as initiating a radical break in the nature of warfare, which in turn had a revolutionary effect.[12] Dennis E. Showalter in the context of nineteenth-century West European military history writes: '"military revolutions" recast states and societies as well as armed forces'.[13] Somewhat cynically, Showalter points out: '"Military revolutions" are still understood viscerally by those who analyze them in Whig contexts: as "progressive" in the sense of improving war-fighting capabilities.'[14] The use of this concept by historians all over the world spread like a plague. As we will see in this book, more or less every historian tries to identify a Military Revolution in their period of specialization. Further, the time scale of the Military Revolution extends from one century to one millennium in the hands of various scholars. Historians working on early modern India emphasized that the pre-colonial regimes collapsed because they failed to imitate the early modern (Geoffrey Parker's) West European Military Revolution in full.[15] In response, several historians also took pains to argue that no Military Revolution occurred in their region of specialization during a particular time period. Rather, they harp on the concept of Military Evolution.[16]

Aware of the fact that this heuristic device is losing its importance, several historians came up with the concept of successive Military Revolutions and mini Military Revolutions which are also termed as Military Technical Revolution (MTR) and Revolution in Military Affairs (RMA). Clifford J. Rogers in an attempt to accommodate the critiques of Parker claims that West European history from circa 1000 onwards experienced both long stretches of Military Evolution with sudden eruptions of Military Revolutions.[17] Why this alternating Military Revolution and Military Evolution had occurred only in medieval and early modern West Europe but nowhere else, is puzzling. Again, several experts of West European warfare point out that, in the so-called time frame of Rogers's sudden Military Revolutions, military technological development in fact occurred slowly. Actually Rogers's sudden and successive West European 'Military Revolutions' are merely RMAs.

The concept of RMA became popular in the 1990s. Williamson Murray and MacGregor Knox write:

> Military organizations embark upon an RMA by devising new ways of destroying their opponents. To do so, they must come to grips with fundamental changes in the social, political, and military landscapes; in some cases they must anticipate those changes. Revolutions in military affairs require the assembly of a complex mix of tactical, organizational, doctrinal, and technological innovations in order to implement a new conceptual approach to warfare or to a specialized sub-branch of warfare.[18]

RMAs in naval affairs are termed RNAs (Revolution in Naval Affairs). In another place, Murray and Knox distinguish between the concepts of RMA

and Military Revolution in the following words: 'If military revolutions are cataclysmic events that military institutions aspire merely to survive, revolutions in military affairs are periods of innovation in which armed forces develop novel concepts involving changes in doctrine, tactics, procedures, and technology.'[19] Following a similar line, Geoffrey L. Herrera also claims that an RMA increases a military's lethality, accuracy, speed and reach in a revolutionary manner.[20]

For Murray and Knox, a Military Revolution is a bigger thing which includes the broader social and political aspects (impersonal forces). A cluster of smaller RMAs which are partly susceptible to human directions comprises a Military Revolution.[21] However, there is a caveat. Murray and Knox at one point accept that Military Revolutions occur within the social and cultural context. However, they assume that new technologies unleash social and cultural force which in turn affects Military Revolution.[22] Herrera also writes somewhat in a similar vein that the new technologies harnessed by RMAs are actually products of bigger technological revolutions that occur in society.[23] So, the ultimate causative factor in their paradigm remains technology. And the aspect of economy is missing in their paradigm. The concept of RMA is more in vogue among security studies experts, while the Military Revolution concept is more popular among historians. Emily O. Goldman, a security studies scholar, defines RMA in the following words:

> RMAs are combination of technological, doctrinal and organizational innovations that produce a dramatic increase in the combat potential of armed forces. ... These fundamental discontinuities with the existing status quo signal a shift in the dominant modes of war fighting.[24]

Thus Goldman includes the non-technological elements in a supplementary fashion in her concept of RMA.

This book, following a chronological narrative style, analyses South Asia's military history through the concepts of MTR, RMA and Military Transformation. I have slightly modified the concepts of MTR and RMA. And the concept of Military Transformation is original and is probably better than the overused concept of Military Revolution. The introduction of a new piece of military technology, like a composite bow, etc., which provides a military edge temporarily to one side, can be categorized as an MTR. However, introduction of an MTR results in a response by the hostile party. Within a short time either the enemy adopts the MTR or comes up with a counter-technology (like advanced fortification technique in response to trebuchet) which nullifies the advantage of the MTR quite quickly. When a military organization or a charismatic individual (king/emperor) adopts two or more MTRs and integrates them with traditional techniques and technologies, resulting in the adaptation of the military organization into a new compound structure, then an RMA occurs. An RMA means a military organization which, by adopting new technology and amalgamating it with traditional techniques, creates

innovative techniques of warfare, which in turn revolutionizes the nature of warfare within a short span. One example from our case is Zahir ud din Babur's integration of gunpowder technology (hand-held firearms and cannons, i.e. two MTRs) with horse archery in the first half of the sixteenth century. At times, an RMA might be comprised of non-technical managerial innovations. Sher Shah's RMA was one such example. Though the RMA is a bigger thing compared to the introduction of an MTR and its effects operate longer compared to an MTR, still the RMA's effectiveness is not long lasting. A RMA which is mostly technical in nature has no linkages with the social fabric and the existing cultural ethos. Thus, RMA has no lasting effect on broader society and vice versa.

This volume steers clear of technological determinism. Technology is definitely an important enabler of military changes, which opens up wide possibilities. The use of a particular piece of technology at a particular time period in different regions and its varying effectiveness depend on the varying social, cultural, economic and ecological factors (especially physical geography like climate, terrain, etc). This volume will show the interactions between the art of war, military technology, politics, economy and culture. Hence, we use the concept of Military Transformation. In this book, the author argues that, at certain points, RMAs had occurred in history. But, they withered away after a short period. In contrast, Military Evolution means slow changes which occur over a long period of time. When such slow incremental changes are integrated with the RMA and also establish a long-term structural relationship with society, the result is Military Transformation. For instance, integration of horse archery and gunpowder technology with the vested interest of the landed aristocracy through the mechanism of the *mansabdari* system in the Mughal Empire is a classic case of Military Transformation. In such cases, societal dynamics prevent rapid changes and encourage slow incremental changes in the styles of warfare. Military Transformation means comparatively fewer revolutionary changes which have larger ramifications on society. In such a schema, military change is partly the product of larger socio-economic changes and innovative military technology. In such a scenario combat techniques improve very slowly in halting stages. To give an example, during the late seventeenth century, the Mughals realized that centralized production and deployment of gunpowder, infantry and field artillery in place of heavy lancers maintained by the landed aristocracy were required to check the Maratha and Persian threat. But, the vested interest of the *mansabdars* acted as a brake as regards such a revolutionary transformation. Several cases of Military Transformation occurred in the last two millennia of Asian history. We will take pre-British South Asia as a case study.

There have been some recent studies of South Asian military history. Pradeep Barua's general history of warfare in the Indian subcontinent devotes only 45 pages out of 306 pages of text to warfare in pre-British India.[25] This book in contrast deals with the South Asian military landscape before 1700 in greater detail. In this book, several chapters focus on the Indian military

scenario during ancient and early medieval eras, and the source base is more broad based compared to the two all-India studies of Barua and Rosen. Further, this volume uses regional and vernacular sources in building up the argument. One of my earlier books which deals with warfare in India till the end of the twentieth century takes a technological, determinist, Whiggish approach and focuses only on the land battles which were fought in North India.[26] None of the above-mentioned works has turned the historical spotlight on pre-British India's naval-maritime activities. The present volume discusses siege warfare and naval actions and also contextualizes pre-British South Asian warfare within broader Eurasian military history.

Pre-British South Asia will be compared and contrasted especially with China and the Middle East/West Asia and to an extent with North Africa/Maghreb (which is actually a part of Eurasia rather than Africa proper) because these regions experienced agrarian bureaucratic empires in the pre-modern era. Further, these three regions were threatened by the horse-riding steppe nomads from Inner Asia and to a certain lesser extent from Arabia. A broad-based comparative analysis that warns a regional specialist about certain things which might appear unique for his/her area of specialization does not seem so when one widens the focus. For instance, the *mamluk* slave soldier system might appear unique to a scholar specializing in medieval Egypt. However, the *mamluk* system spread from West Asia to Egypt in the west and South Asia in the east. Again, Indian military developments have been shaped by the flow of technologies through the medium of mercenaries from other parts of Asia. This will help us to reconstruct how the various parts of Asia interacted with each other, especially as regards military changes. Hence, besides comparative history, the volume also follows the methodology of interlinked/interconnected history. One example is the introduction of an MTR, i.e. war elephants from ancient India, which shaped to a particular extent the dynamics of Hellenistic warfare in North Africa and West Asia. It is to be noted that I have attempted to put pre-British South Asian military history within the Eurasian, but not global, perspective. This is because some interlinkages/connections as regards flow of ideas, techniques and recruits can be established between the Chinese, Indian, Persian, Ottoman, North African and West European polities. One example is the spread of chariot technology in these regions. However, I do not see any connections between the Ming and Mughal regimes on one hand, and the Inca and Maya empires on the other hand.

Nevertheless, the global history approach is influencing military historians. Jeremy Black's magisterial survey titled *European Warfare in a Global Context: 1600–1815*[27] provides some interesting scattered evidence regarding the interaction between South Asian and West European warfare during the early modern era. This monograph will build up a more coherent picture and will pivot around the South Asian perspective. Then, Peter Lorge's overview of Asian Warfare has two chapters on South Asia and covers the period from 1200 to 1800.[28] Lorge's analysis is full of insight, especially as regards the

comparative developments of gunpowder weapons in China and India from the eleventh century till circa 1800. However, lack of space prevents him from doing full justice to the issue. This volume also looks at the pre-gunpowder era of South Asian military history.

Long before the Prussian military staff officer turned philosopher Carl Von Clausewitz's assertion that war is a non-linear activity, both Kautilya and Kamandaka, two Sanskrit *acharyas*, noted that *yuddha* (warfare) is *anitya* (uncertain). The role of chance, fortune and the uncertainty principle is best reflected in battles. Great commanders (Sun Tzu's heaven-born generals) enjoy great autonomy in shaping the dynamics of battle. Our narrative also highlights the importance of battles and human agency in occasionally shifting the trajectory of history within the broader paradigm of Military Transformation, which is the product of long-term impersonal forces. Hence, chance and individuals do play an important role in the rise and fall of kingdoms and empires.

The present volume engages with the following debates. First, did pre-British (i.e. pre-modern) India's military history represent stasis and 'flower/ritualistic warfare'? Second, was pre-British India's relatively bloodless war the product of stateless Indian society? Has it got anything to do with the caste-oriented divisive Indian society? Third, can we speak of a unique Indian way of warfare (as part of the Eastern/Oriental military tradition) which is the polar opposite of the rational, scientific and bureaucratic Western Way of Warfare? Was the Indian Way of Warfare partly the product of otherworldly Brahmanical culture? Fourth, how far did technology shape the dynamics of warfare in pre-British South Asia? Further, this monograph also engages with the big debates in pre-modern Eurasian history like feudalism and cavalry warfare, use of gunpowder weapons and rise of the West, etc.

The first chapter shows the impact of horse-drawn-chariot-riding Aryans from Central Asia, who entered the subcontinent roughly around 1200 BCE. By adopting the chariots, *paik*s, horses and elephants in their military establishment, the Indian polities in around 300 BCE initiated a Military Transformation. This resulted in the genesis of the *chaturanga vahini* pivoted round the horse-drawn war chariots. Spread of iron technology and rising agricultural revenue enabled the Mauryas to construct a bureaucratic state which in turn supported a dynamic military establishment. The Battle of Hydaspes (326 BCE) and invasion of post-Maurya India by the steppe nomads made the indigenous rulers aware of the importance of fast moving cavalry force and horse archery. This is the subject of Chapter 2. The Guptas were able to defeat the Huns because they initiated an RMA. Mounted archery of the Guptas and ecological constraints of steppe nomadic warfare resulted in failure of the Huns to conquer the warm fertile plains of North India.

However, mounted archery vanished from India after the Guptas. This was because of political, cultural and ecological factors. After the collapse of the Guptas, the South Asian armies depended mainly on elephants supported by *paik*s and heavy cavalry equipped with swords. The use of war elephants as a

strike corps in India represented a case of Military Transformation. This issue is taken up in Chapter 3. Early medieval India witnessed the emergence of the warrior caste known as Rajputs. The Rajput clan system prevented the emergence of unified polities. Rajput warfare was somewhat similar to chivalrous sport. Ideologically, they looked down upon innovations and *yantra*s (machines) as unmanly. The elitist Rajput chiefs looked down upon plebeian infantry. One could argue that a sort of military de-modernization occurred under the Rajputs. For all these, the Rajputs had to pay a high price when the Islamic Turks moved into India from Afghanistan. And this is the theme of Chapter 4.

According to Charles Oman, the Battle of Adrianopole witnessed the beginning of the age of the horse, which continued till the advent of gunpowder infantry armies during the early modern age. Bernard S. Bachrach challenges the view of cavalry-centric warfare in medieval West Europe.[29] However, the importance of cavalry in medieval Asia could not be discounted. The Turks were able to overwhelm the Rajputs partly due to their possession of better horses, better saddles and stirrups. Between the ninth and twelfth centuries CE, the elephant-*paik*-centric Hindu armies had no successful counter to the mounted archery of the Turks.

The volatile issue of the impact of gunpowder weapons in South Asia is the subject of Chapter 5. Due to the Portuguese and Ottoman influence, gunpowder was introduced in West and North India during the early sixteenth century. The Deccani Sultanates quickly adopted gunpowder weapons in their army. It was a case of RMA. The argument that the Asian rulers regarded cannons as sacro-magical replicas cannot be sustained. Despite the use of gunpowder weapons, unlike in West Europe, handgun-equipped infantry supported by mobile field artillery did not become dominant elements of warfare in China, India and Persia. This was because the composite bows of mobile steppe nomadic mounted archers remained more effective than muskets at least till the 1750s. Physical geography was an additional factor which impeded the effectiveness of gunpowder artillery in South Asia.

The last chapter shifts the focus to naval and maritime activities in premodern India. The short-lived existence of a Blue Water Navy under the Cholas in the eleventh century was a case of a Naval RMA. The Delhi Sultanate had no navy and the Mughal Empire made sporadic attempts to construct a navy. The Mughals maintained a riverine fleet for coastal warfare but lacked a Blue Water Navy. Before 1650, no hostile navies ever threatened India's coastline. Rather, the governments at Delhi always had to maintain a large land force for guarding the North-West Frontier passes against a probable foreign invasion through Afghanistan. Second, the steppe nomadic ethos of the Mughal aristocracy made them landlubbers. During the seventeenth century, the West European navies intruded into the Indian Ocean and established maritime supremacy. In 1680, faced with the *ferangi* naval threat, Aurangzeb made an attempt to construct an ocean-going navy. Inadequate funding and lack of skill among the shipwrights at their disposal hampered Mughal naval effort and partly paved the way for British colonialism.

This volume is a cross between research based on primary sources and a synthesis of secondary literature. This book depends on Sanskrit and vernacular sources and translated accounts of foreign observers. Since the book is designed mainly for Western as well as general literate readers, only the author's different interpretation from the critical editions will be noted in the endnotes. There is a serious problem as regards historical sources of pre-British India. Victor Davis Hanson states that ancient Western writings on military affairs were not imbued with broader religious and philosophical questions as was the case for the non-Western societies. Rather, the Western military writings functioned as pragmatic guides for the field commanders.[30]

The contrast could not be greater with the case of ancient India. Sanskrit literature, as Juan Mascaro writes, is on the whole a romantic literature interwoven with idealism and practical wisdom and with a passionate longing for spiritual vision. While the *Vedas* emphasize the outer world, the world of action of the Immanent, the *Upanishads* emphasize the inner world, the world of knowledge and of the Transcendent Spirit.[31] The literate class in ancient and early medieval India were the Brahmin sages. They considered everyday life as mundane and not worth recording. Hindu fatalism further discouraged chronicling of political events. Hence, rather than concentrating on day-to-day material life, the sages composed abstract religious and philosophical texts. Serious problems exist as regards dating and authorship of ancient India's texts. Most of the texts were composed at an early date but written down quite late. This was due to the prevalence of oral culture in ancient India's society. This in turn raises the problem of interpolations by later authors which got embedded in the main body of the texts. Hence, within a particular text, various layers could be identified. To an extent, this problem exists in Homer's *Iliad* and *Odyssey*. We are not sure whether the hymns of the *Rig Veda*, which throws light on the Early Vedic Age, were the product of a single or several poets. We have no knowledge about the name of any one of them. The advent of Islam in South Asia during the early medieval era resulted in the writing of political and military accounts by the court chroniclers. However, their accounts provide 'views from the top' and centre around the activities of the rulers and the nobles. The Mughal era also saw the emergence of autobiographical writings by the rulers. But, there are no soldiers' accounts to portray warfare from below. Translated Turkish and Persian sources are the mainstay for portrayal of warfare under the Delhi Sultanate and the Mughal Empire. Now, let us shift the focus to the origins of warfare in South Asia.

Notes

1 Sanjay Subrahmanyam, 'On the Window that was India', in Sanjay Subrahmanyam, *Explorations in Connected History: From the Tagus to the Ganges*, New Delhi: Oxford University Press, 2005, p. 7.

2 Stephen Peter Rosen, *Societies and Military Power: India and its Armies*, New Delhi: Oxford University Press, 1996.

3 Stephen Peter Rosen, 'Military Effectiveness: Why Society Matters', *International Security*, vol. 19, no. 4 (1995), p. 19.
4 One such example is Georges Duby's *The Legend of Bouvines: War, Religion and Culture in the Middle Ages*, tr. by Catherine Tihanyi, Cambridge: Polity, 1990. Duby argues that, as regards the reconstruction of this battle by the historians there seems to be no differentiation between facts and fiction.
5 For a recent assessment of writings on Indian military history, see Kaushik Roy, 'Historiograpical Survey of the Writings on Indian Military History', in Sabyasachi Bhattacharya (ed.), *Approaches to History: Essays in Indian Historiography*, New Delhi: Primus, 2011, pp. 119–57. The general assumption among the historians dealing with Indian history is that there was no strong state before the advent of the British. It was only the colonial masters who introduced the concept of unitary sovereignty in place of divisive sovereignty in South Asia. So, a divisive/segmentary state at best had a loose disorganized military incapable of conducting decisive sieges and battles. At present, the votaries of segmentary and feudal states in pre-modern India outnumber the minority group who claim that pre-British India saw the operation of strong imperial polities. For an overview of this lively debate, see Hermann Kulke (ed.), *The State in India: 1000–1700*, 1995, reprint, New Delhi: Oxford University Press, 2010. For an overview of stateless pre-British Indian history refer to Burton Stein, *A History of India*, 1998, reprint, New Delhi: Oxford University Press, 2004.
6 Victor Davis Hanson is the most famous advocate of this approach. See his *The Western Way of War: Infantry Battles in Classical Greece*, 1994, reprint, Berkeley and Los Angeles: University of California Press, 2009 and *Warfare and Agriculture in Classical Greece*, Berkeley and Los Angeles: University of California Press, 1998.
7 Brigadier G.D. Bakshi, *The Indian Art of War: The Mahabharata Paradigm, Quest for an Indian Strategic Culture*, New Delhi: Sharada Publishing House, 2002.
8 Christopher Coker, *Waging War without Warriors? The Changing Culture of Military Conflict*, Boulder, CO: Lynne Rienner, 2002.
9 Emily O. Goldman, 'Introduction: Information Resources and Military Performance', *Journal of Strategic Studies*, vol. 27, no. 2 (2004), p. 201.
10 One example is J.F.C. Fuller's *Armament and History: The Influence of Armament on History from the Dawn of Classical Warfare to the End of the Second World War*, 1945, reprint, New York: Da Capo Press, 1998.
11 G.N. Pant did not establish any linkages between evolution of a piece of technology and the broader social, cultural and economic matrix. For him, continuous technological developments seem to be free floating. Among his numerous works, see *Indian Archery*, 1978, reprint, New Delhi: Agam Kala Prakashan, 1995.
12 Geoffrey Parker, *The Military Revolution: Military Innovation and the Rise of the West, 1500–1800*, Cambridge: Cambridge University Press, 1988.
13 Dennis E. Showalter, 'Information Capabilities and Military Revolutions: The Nineteenth-Century Experience', *Journal of Strategic Studies*, vol. 27, no. 2 (2004), pp. 220–21.
14 Showalter, 'Information Capabilities and Military Revolutions: The Nineteenth-Century Experience', p. 238.
15 Jos J.L. Gommans and Dirk H.A. Kolff, 'Introduction: Warfare and Weaponry in South Asia, 1000–1800 AD', in Jos J.L. Gommans and Dirk Kolff (eds), *Warfare and Weaponry in South Asia: 1000–1800*, New Delhi: Oxford University Press, 2001, pp. 1–42; and Stewart N. Gordon, 'Symbolic and Structural Constraints on the Adoption of European-style Military Technologies in the Eighteenth Century', in Richard B. Barnett (ed.), *Rethinking Early Modern India*, New Delhi: Manohar, 2002, pp. 155–78.
16 Following Jeremy Black, James Raymond in his *Henry VIII's Military Revolution: The Armies of Sixteenth-century Britain and Europe*, London and New York:

Tauris, 2007 concludes that the concept of early modern Military Revolution in the context of West Europe is defunct.

17 Clifford J. Rogers, 'The Military Revolutions of the Hundred Years War', in Clifford J. Rogers (ed.), *The Military Revolution Debate: Readings of the Military Transformation of Early Modern Europe*, Boulder, CO and San Francisco, CA: Westview, 1995, pp. 55–93.

18 Williamson Murray and MacGregor Knox, 'Thinking about Revolutions in Warfare', in MacGregor Knox and Williamson Murray (eds), *The Dynamics of Military Revolution: 1300–2050*, 2001, reprint, Cambridge: Cambridge University Press, 2003, p. 12.

19 Williamson Murray and MacGregor Knox, 'The Future Behind Us', in Knox and Murray (eds), *The Dynamics of Military Revolution*, p. 179.

20 Geoffrey L. Herrera, 'Inventing the Railroad and Rifle Revolution: Information, Military Innovation and the Rise of Germany', *Journal of Strategic Studies*, vol. 27, no. 2 (2004), pp. 244–45.

21 Murray and Knox, 'Thinking about Revolutions in Warfare', in Knox and Murray (eds), *The Dynamics of Military Revolution*, pp. 12–13.

22 Murray and Knox, 'The Future Behind Us', in Knox and Murray (eds), *The Dynamics of Military Revolution*, pp. 177–78, 180.

23 Herrera, 'Inventing the Railroad and Rifle Revolution: Information, Military Innovation and the Rise of Germany', p. 246.

24 Goldman, 'Introduction: Information Resources and Military Performance', pp. 212–13.

25 Pradeep Barua, *The State at War in South Asia*, Lincoln, NE and London: University of Nebraska Press, 2005.

26 Kaushik Roy, *From Hydaspes to Kargil: A History of Warfare in India from 326 BC to AD 1999*, New Delhi: Manohar, 2004.

27 Jeremy Black, *European Warfare in a Global Context: 1600–1815*, London: Routledge, 2007.

28 Peter Lorge, *The Asian Military Revolution: From Gunpowder to the Bomb*, Cambridge: Cambridge University Press, 2008.

29 Bernard S. Bachrach, in his 'On Roman Ramparts: 300–1300', in Geoffrey Parker (ed.), *The Cambridge Illustrated History of Warfare: The Triumph of the West*, Cambridge: Cambridge University Press, 1995, pp. 64–91 underrates the importance of cavalry and overrates the importance of foot-slogging infantry and siege warfare in post-Roman warfare.

30 Victor Davis Hanson, 'The Modern Historiography of Ancient Warfare' in Philip Sabin, Hans Van Wees and Michael Whitby (eds), *The Cambridge History of Greek and Roman Warfare*, 2 vols, Cambridge: Cambridge University Press, 2007, vol. 1, *Greece, the Hellenistic World and the Rise of Rome*, p. 3.

31 *The Bhagavad Gita*, tr. from the Sanskrit with an Introduction by Juan Mascaro, London: Penguin, 1962, Introduction, pp. x, xxi.

1 From tribe to kingdom

Chariots and transformation of warfare in South Asia, 1500–300 BCE

Reconstruction of ancient Indian warfare is possible for the period starting with the advent of the Aryans into the Indian subcontinent roughly around 1200 BCE.[1] The Aryans had three trump cards over the indigenous inhabitants of the subcontinent. They possessed horses, iron implements and chariots. These three elements fused together to generate an RMA which in turn formed a decisive military system. Gradually, the war-chariot-centric military organization under the Aryans spread its sway over the whole of the landmass south of the Himalayas and dominated South Asian landscape for about one thousand years. This chapter traces the trajectory of the Military Transformation initiated by the war chariots. However, the impact of chariots in different parts of the South Asian land mass was differential as their effectiveness was mediated by culture and physical geography. Now, let us have a glance into the state of warfare in the subcontinent before the advent of the Aryans.

Organized violence in pre-Aryan India

For reconstructing warfare in the pre-Aryan era, we lack written sources. The script of Indus Civilization of the pre-Aryan era is still undeciphered, and scholars have to depend mainly on archaeological sources. The archaeologists still debate about the dates regarding the evolution of pre-historic settlements in Asia. In the arid Helmand river basin, agriculture had begun before 4000 BCE. In the pre-state era, the implements for agriculture and weapons for warfare were more or less similar. The socket-hole axe, which was used for both agriculture and warfare, had originated in Mesopotamia around 4000 BCE. The diffusion of the socket-hole axe from Mesopotamia to western Persia/Iran occurred around 3000 BCE and this piece of technology reached the Helmand region in around 2600 BCE.[2]

Around 3000/2500 BCE, further east of Helmand region, near the River Indus an urban civilization later termed as the Indus Valley Civilization emerged. The alluvial plains of the great rivers facilitated the spread of agriculture and the emergence of sophisticated urban cultures in Mesopotamia in the Tigris-Euphrates region (around 3500 BCE), Nile Valley (3200 BCE) and Indus Valley (2800 BCE). Whether the Indus Civilization was of indigenous

origin or influenced by the Helmand culture is an open question. The earliest Neolithic (New Stone Age) settlement in South Asia was at Mehrgarh (North-East Baluchistan, now in Pakistan) and could be dated to around 7000 BCE. With the help of stone tools, the settlers at Mehrgarh were able to cultivate rice, wheat and barley.[3] Cotton cultivation which started at Mehrgarh around 4000 BCE, spread to the Upper Indus region.[4]

The Indus Valley Civilization was a Bronze Age Civilization. In around 6000 BCE, the Neolithic people in Anatolia experimented with copper. The bronze age proper started around 4000 BCE.[5] The art of mixing tin and copper for making bronze (which is harder than pure copper and hence better suited for making weapons and agricultural as well as hunting implements) reached the Indus Valley roughly around 3000 BCE.[6] The Indus Valley people practised tin and antimony alloying. They were able to extract pure copper (up to 99 per cent) from chalcopyrites.[7] The Indus Civilization at its height covered roughly 700,000 square kilometres. The population of this region was estimated between 1 and 5 million. The two principal cities of this Civilization were Mohenjo-Daro and Harappa. These two cities had about 150,000 people. Total urban population of the Indus Valley Civilization came to about 250,000 persons.[8] As a point of comparison, in around 3000 BCE, the population of Egypt was 1 million.[9] The average population density in the Indus Valley was about six persons per square kilometre.[10]

The Indus Valley Civilization domesticated sheep, goats, humped cattle, water buffaloes and elephants.[11] Domestication of animals and expansion of agriculture resulted in spread of sedentary settlements, which in turn gave rise to fortifications of the human settlements during the Neolithic era. The fortifications were geared to provide protection to the stored agricultural surplus as well as the domesticated animals. One of the famous Neolithic fortified settlements was Jericho. Between 8350 BCE and 7350 BCE, Jericho was surrounded by a 10-feet-thick and 13-feet-high wall. The wall probably enclosed some 765 yards. The art of fortification became sophisticated with time. Around 4500 BCE, at Yalangach in the Transcaspian Lowlands, the walls had outward-facing round towers.[12]

Back in the Indus Valley, one of the cities named Kalibangan was enclosed by a wall strengthened with rectangular towers at the corners. Further, the wall had several gates which in turn were flanked with guardrooms. Both at Harappa and Mohenjo-Daro, the citadels were surrounded by walls constructed with mud and baked bricks.[13] The citadel in Harappa was shaped like a parallelogram.[14] Other sites in the Indus Valley like Banavali had square towers.[15] Square and rectangular towers, gates with guardrooms and walls constructed with mud and baked bricks were legacies of the Indus Valley which were utilized by the fortification engineers of South Asia from 300 BCE onwards.

As regards weapons, stone arrow heads, along with arrows made of bronze and copper have been found in the various Indus sites. The arrow heads were flat and thin with long narrow barbs.[16] Bows were invented in Eurasia at least 20,000 years ago by the hunter-gatherers.[17] Knives and daggers of copper

have also been unearthed. The handles of these weapons were made of wood which was split for the insertion of the tangs and the blades. Spear heads, which were double edged and pointed (average length of each varied between three and four inches), made of copper were also excavated. Around 2500 BCE, swords were used. In the Indus Valley sites, double-edged heavy swords were unearthed. Bronze blades increased penetrating power compared with stone or copper blades. In addition, mace heads of stone, copper and bronze were also found at Harappa and Chanhu-Daro. Clay bullets (each weighed about six ounces) for use by slingers have also been found.[18] It goes without saying that these weapons were also used for hunting purposes.

The weapons of war along with the art of fortification probably spread from Anatolia to Mesopotamia, then to Persia and finally to the Indus region. Diffusion occurred through the medium of immigrants and merchants. Rather than overland merchants, probably sea-borne commerce aided the diffusion of techniques from the Middle East to the western fringes of South Asia. We have evidence of sea-borne commerce between Mesopotamia and the Indus Civilization. At Lothal (now in Gujarat), 720 kilometres south-east of Mohenjo-Daro, besides the ruin of an urban settlement, a brick dockyard was excavated. It was connected with the Gulf of Cambay by a channel. Further west, Sutkagen-Dor, 48 kilometres from the Arabian Sea in the Makran Coast (now in Pakistan), was a sea port.[19]

We have no solid data about the political system prevalent in the Indus Valley Civilization. Probably no super state existed. Some speculate that the cities were ruled by the priests and large landowners. Each city was probably independent like a polis. From around 1500 BCE, the Indus Valley Civilization started declining. We lack data about the organization of the defense force (if any) maintained by the Indus Valley cities. The hunter-gatherers' 'primitive warfare' was comprised of raids and ambushes rather than pitched battles.[20] We could speculate that the Indus cities used their defensive fortifications and close-quarter hunting/combat weapons to ward off raids and ambushes by inhabitants of the countryside. Lots of ink has been poured over the issue of decline. Some scholars harp that desiccation of the Indus Valley, flood due to climate change and man-made inundations, etc., resulted in the collapse of the Civilization. The traditional view was that the Indus Valley Civilization collapsed due to the attack by the incoming Aryans.[21] Archaeological excavations in the various Indus Valley sites have yielded toy ox carts with solid wheels but no trace of horse-drawn chariots with spoked wheels, which find frequent mention in the Vedic literature generated by the Aryans[22]

Warfare in the Vedic period

Who were the Aryans? At present, it is a politically incorrect question to ask in India. Till the 1970s, the view within India was that the Aryans were part of the Indo-European race which originated in South Russia and the Kirghiz steppe. The original homeland of the Indo-Europeans is also vigorously

debated. For some scholars, the Indo-Europeans' original homeland was the Baltic regions (modern Lithuania, Poland and East Germany).[23] One branch of the Aryans known as the Indo-Iranians moved eastwards into Iran and a sub-branch of them called Indo-Aryans moved into India. While entering India, they destroyed the Dravidian Indus Valley Civilization. From the 1980s, the dominant view pushed by Liberal Marxist historians within the Indian academic circuit is that the Aryans did not constitute a race, but a language group. For reasons of political sensitiveness, historians assert that the Aryans did not launch any large-scale invasion when they entered the subcontinent. Rather, the Aryan language group slowly absorbed and assimilated the non-Aryan speakers of North-West and North India.

It would be illogical to claim that no fighting occurred between the two 'language' groups. Even if we discount the idea of large-scale campaigns between the Aryans and the non-Aryans, we cannot do away with the possibility of sporadic small-scale confrontations between the Aryans and pre-Aryan inhabitants of the subcontinent. Even if an Aryan invasion occurred, it was no *blitzkrieg*. The Aryans took about 700 years (1200 BCE till 500 BCE) to establish control over *Brahmavarta* and *Aryavarta*. And the Dravidians were gradually pushed back from the Upper Indus Valley and Punjab towards Deccan and the southern tip of the Indian Peninsula.[24] In the sphere of land warfare, the Aryans initiated an RMA centred round two MTRs: horse-drawn war chariots and iron weapons.

Here mention may be made of Robert Drews's theory. According to Drews, the Bronze Age Civilizations of the Eastern Aegean and the Near East were founded on a chariot-based military system. The chariots functioned as a mobile platform for the archers equipped with composite bows. These civilizations collapsed roughly around 1200 BCE due to attack by the 'barbarians'. The barbarians probably came from North Italy and the Balkans. The barbarian attacks to an extent were products of large-scale migrations and climatic changes. The barbarians were able to carry fire and sword among the Bronze Age cities of Eastern Mediterranean due to their military superiority. The barbarian infantry, armed with long swords and javelins, was able to overwhelm the small professional chariot armies of the Bronze Age kingdoms which mainly relied on bows and arrows. The barbarian infantry followed 'swarming' tactics and with their javelins wounded the horses drawing the chariots. Then, the chariot warriors were decimated in close quarter combat by barbarian infantry equipped with long (slashing) swords. This marked a Military Revolution, claims Drews, as the art of warfare changed radically with the collapse of the Bronze Age Civilizations and the onset of the Iron Age. From circa 1200 BCE onwards, close-quarter infantry combat became the mainstay of warfare, at least in Greece. The infantry equipped with heavy armour fought in ordered formations.[25]

Even if we accept Drews's theory, the scenario was different in India. True, the subcontinent's Bronze Age Civilization, i.e. the Indus Valley Civilization, also collapsed due to attack by the outsiders ('barbarians') roughly around the same time when the other Bronze Age Civilization of the Eastern Mediterranean

collapsed, i.e. circa 1200 BCE. However, the subcontinent's Bronze Age Civilization, i.e. the Indus Valley Civilization, was not founded on chariot-based armies. In South Asia's case, the 'barbarians' (Indo-Aryans) introduced iron weapons and horse-drawn chariots. At least in the case of Egypt, the barbarians attacked from the sea. They came in boats and were known as Sea People.[26] In the case of the Indus Valley Civilization, the raiders were all landlubbers. There is no evidence of any naval attack. And unlike in the Near East, chariots dominated the subcontinent's military landscape and societal ethos till circa 300 BCE. Further, the use of chariots spread in the subcontinent in a gradual, halting manner. Hence, rather than the term Military Revolution, the concept of Military Transformation is more apt while discussing the emergence of chariot-based armies in the case of ancient India.

To an extent, the Aryans initiated the Iron Age in India. The Bronze Age in Eurasia lasted roughly from 4000 to 1200 BCE. Iron weapons and tools could be easily manufactured in larger numbers due to larger availability of iron ore. In contrast, bronze requires the use of tin, which was only available in small quantities and was expensive. Within India, iron ore is available in abundance in Punjab, Uttar Pradesh, Rajasthan, Bengal, Orissa, Mysore and Madras regions.[27] The Ayrans entered India from Afghanistan through the north-western passes. First they settled in *Brahmavarta* and then they spread into *Aryavarta*. Indus alluvium soil was quite soft, and agriculture was possible with a wooden plough. Punjab has 10 to 20 inches of annual rainfall but a lot of underground fresh water. The Lower Indus Plain has much less rainfall, and in Sind it is less than five inches annually. In contrast, the Gangetic Valley has 25 to 40 inches of annual rainfall. This in turn gave rise to monsoon forest.[28] With the aid of iron implements, the Aryans from 1000 BCE onwards were able to clear the monsoon forest and swampy jungles on the river banks of Ganga-Jamuna Doab.[29]

For understanding the techniques of Indo-Aryan warfare, besides archaeological data, we have several Vedic texts and the two *epic*s named *Ramayana* and the *Mahabharata*. The problems of interpreting and dating ancient India's texts have been referred to in the Introduction. The Vedic texts are primarily 'religious' books containing sacred knowledge.[30] Several scholars assert that the descriptions of combat in the *veda*s are actually imageries deployed by the sages to explain the importance of religious rituals. Nevertheless, a critical analysis of the *veda*s and the *epic*s reflect the martial spirit of the early Aryans and also occasionally throw light on the nature of combat in which the Aryans engaged. If Vedic rituals were regarded as being as significant as combat in the ancient texts, then warfare definitely occupied an important place in the early Aryan culture. Probably, we could speak of a militaristic culture in the Vedic Age. Let us have a glance at the military hardware at the disposal of the Indo-Aryans.

Robert Carroll writes that the biblical narratives are mythic in which the gods play an active role in human affairs. So, the biblical stories could be categorized as 'theocratic history'. These stories have a quasi-historical aspect

in their approach to human society, in which the gods play (or a single god plays) a determining role. If the people offend their deities then these gods turn against their own people.[31] The *Iliad* was probably composed around 750 BCE–650 BCE. There is a debate among scholars as to whether the *Iliad* contains elements of the Mycenaean Age, or reflects the values of the Dark Age of ninth-century-BCE Greece or is the product of the polis-based society of Classical Greece.[32] The *Iliad* according to J.E. Lendon is not the work of a single poet. It accumulated over five centuries (between 1200 BCE and 650 BCE) through the recitation of several generations of bards.[33] In the *Iliad*, the gods play an important role among the mortals. Besides gods, another type of divine beings, the heroes, also shape the dynamics of combat significantly.[34]

E.W. Hopkins writes that the highest god in ancient Indian religious literature is at the same time a tricky mortal. And the chief knights are sometimes depicted as good and at times as sinful men.[35] The Indian *epics* are examples of theocratic history. *Ramayana* and *Mahabharata*, the two *epics* (known as *itihasapurana*; *itihasa* stands for history) are a mixture of facts and fiction rather than a portrayal of any particular historical phenomenon. Gods (like Indra, Krishna) and heroes (like Arjuna, Rama, etc.) are critical to the nature of warfare as depicted in the Sanskrit *epics*.

By 3000 BCE, the pastoral nomadic cultures of Eurasia centred round Dneister, the Ural river and Central Asia were experimenting with horse riding and ox-drawn wheeled carts.[36] We could speculate that chariots were first invented by the Indo-Europeans in Armenia and then this war machine percolated among the Near East and Middle East polities. The Sumerians were probably using chariots drawn by asses as early as 3000 BCE. The wheels were solid wood sections held together by pegs. The absence of a mouth bit made controlling the wild asses difficult and the speed of such chariots probably did not exceed 10 miles per hour.[37]

We have evidence that war chariots were used in Syria around 1800 BCE. The Hyksos who invaded northern Egypt around 1600 BCE used chariots. The Semitic Hyksos were originally from the Arabian Peninsula and moved up into Mesopotamia, Syria and Palestine. The Hyksos dominated Egypt for about 100 years. Ironically, the Egyptians made use of the new military technologies introduced by the Hyksos, heavier bronze swords, composite bows and chariots, to overthrow Hyksos rule and establish the New Kingdom in 1567 BCE. The Mitanni in the Middle East around 1600 BCE also deployed war chariots. From the Middle East, through the Indo-Iranians and then the Indo-Aryans, probably the chariot technology reached North-West India.[38] According to one interpretation, the Mitannis were a branch of Indo-European people, and one sub-branch from them (Indo-Iranian) migrated east and entered India (they could be designated as Indo-Aryans) through Iran and Afghanistan. It is interesting that the gods like Indra, Varuna, Mitra, etc, of Mitanni in Akkadian languages are the same as the gods depicted in the *vedas* in Sanskrit language.[39] We could speculate that the chariot technology entered South Asia through this migrating Indo-European sub-branch.

The Tocharians, one of the Indo-European groups which settled in Xinjiang, was probably responsible for the diffusion of chariots into China. The chariots entered North-West China from Central Asia between 1300 and 1200 BCE.[40] Ralph D. Sawyer opines that the chariot constituted the strike force of the late Shang, Western Chou, Spring and Autumn periods (722 BCE–481 BCE).[41] Probably, the Mycenaeans, a branch of the Indo-European people who moved into Greece in the beginning of the second millennium BCE, introduced two-horse-drawn light-wheeled chariots into Greece. By 1400 BCE, the chariot-borne Mycenaean aristocracy from their fortified palace centres which were surrounded by city walls dominated Attica and Peloponnese. However, the mountainous terrain of Greece and the low availability of horses soon resulted in replacement of chariot warfare with infantry warfare in Greece, unlike in ancient India.[42]

Warfare in Vedic India was not a disorganized melee by an indisciplined armed host. The *Rig Veda*, the earliest text of the Indo-Aryans comprising of more than 1,000 hymns, was composed between 1200 and 900 BCE and represented the Early Vedic Age. The *Rig Veda* mentions various types of *vyuha* (order of battle – ORBAT) for arraying troops in prescribed manner before the beginning of battle. The *Mahabharata* depicts a war which lasted for 18 days. This epic explains *Vajravyuha* (thunder formation) which is an offensive deployment designed to pierce the enemy formation. In the *Vajravyuha*, the strongest force is massed in the centre and is shaped like a needle and designed to penetrate the hostile formation. The danger is that if the strike force in the centre bogs down, then the flanks which have been kept comparatively weaker are vulnerable to enemy encircling attacks. In contrast, the *Sarvatobhadra* formation is a defensive battle array aimed at blunting the hostile foray. In this formation, the centre comprises of two strong defensive lines protected by defence in depth on both the flanks.[43] Frank A. Kierman, Jr. stresses that the ancient Chinese armies (722 BCE–481 BCE) were not mere mobs, and battles were not disorganized melees. An army could attack and then break off action to reorganize. However, when it attacked again, then, at a certain point, the formation could disintegrate.[44] The biggest unit in the Vedic battlefield was the *sena* which was comprised of 500 elephants and 500 chariots. And the smallest unit was *patti*, which comprised one chariot, one elephant and five infantry men. Several *sena*s comprised the army, known as the *camu*. However, the Vedic and Epic era armies were not all-weather armies. The *Mahabharata* notes that the best fighting period is between November and March. The commander deployed his force in a level plain. A trench was dug around the camp. The soldiers pitched their tents within the camp. The ruler's tent was guarded by the guards. Several tents were filled with logistical materials like bows, bowstrings, swords, arrows, spears, quivers, honey, butter, lac, fodder for the horses and elephants, etc. The *Mahabharata* notes the presence of non-combatants like artisans, bards, traders and prostitutes within the camp.[45]

The *Rig Vedic* hymns mention chariots drawn by horses. Mobility of the horses is emphasized by the *Rig Veda*. One of the hymns says that the gods

have fashioned horses out of the sun. Foot archers as well as chariot-borne archery constituted the force structure of the Vedic Aryans.[46] Chariots comprised the centrepiece of Vedic and Epic age armies. The Egyptian chariots at the Battle of Kadesh (1274/1275 BCE) functioned as mobile platforms for the archers. One of the greatest chariot battles of antiquity was the Battle of Kadesh, where two-man Egyptian chariots clashed with three-man Hittite chariots.[47] The Hittite chariots were bigger: six-wheeled platforms which were used as shock weapons. There is a debate among scholars as to whether the heavier Hittite chariots were used as battering rams or as slower and stable platforms for the archers armed with composite bows.[48] Doyne Dawson asserts that the Hittite charioteers were archers and carried lances as last-ditch weapons.[49] Arthur Cotterell claims that the Hittite warriors used composite bows from their chariots.[50] Bows, says one of the hymns of the *Rig Veda*, are responsible for winning battles as well as effective for conducting raids for capturing cows.[51]

According to R. Gabriel, composite bows first appeared in the victory stele of Naram Sin (2254 BCE–2218 BCE), the grandson of Sargon the Great. The composite bow outranged the single and compound bows and produced greater power from a shorter draw. The composite bows spread into Palestine around 1800 BCE and were introduced into Egypt by the Hyksos in 1700 BCE. The Egyptians put archers equipped with composite bows on their chariots. The effective range of the simple bow varied from 50 to 100 yards. And the arrow shot by a simple bow was unable to penetrate leather or bronze armour. The effective range of the composite bows varied between 250 and 300 yards.[52] The composite bow was a recurve bow made of wood, horn and tendons from oxen, carefully laminated together. These bows were probably invented by the nomads of the Eurasian steppe and brought into Sumer by the mercenary nomads.[53]

The light Egyptian chariot was probably constructed with wood and leather. Cotterell assumes that each Egyptian chariot weighed probably 30 kilograms.[54] The Egyptians improved the control, manoeuverability and speed of the chariot by moving the axle to the rear of the carrying platform.[55] In China, the earliest chariot was comprised of a rectangular box which was able to accommodate three persons. The chariot box enclosed by a railing opened in the rear. The horses were fastened to the yoke saddle by leather straps that run separately across the neck of the horse and also to its mouth. The harness is joined at the mouth with a bit and cheek pieces made of bone or horn or metal.[56]

The *Ramayana* mentions chariots covered with leather. The Rig Vedic charioteers used *varma* (coats of mail) and *sipra/sironastra* (helmets). Equipped with *asi* (swords), *banas* (arrows) and *dhanus* (bows), the Kshatriyas on the chariots went to combat.[57] The *Satapatha Brahmana* describes the length of an arrow of about three feet nine inches. Rama is said to have used *narach* (iron arrows).[58] The *Bhagavad Gita* composed around 500 BCE represents the dialogue between Lord Krishna and the Pandava warrior Arjuna against the background of the Mahabharata War. The *Bhagavad Gita* tells us that the

Pandava and the Kaurava armies were comprised of heroic archers on their chariots. Cymbals, trumpets and conch shells were used for signalling and sending messages during the war.[59]

Warfare as depicted in the *Ramayana* and the *Mahabharata* probably referred to the nature of combat in the subcontinent between 1100 BCE and 1700 BCE. Combat comprised massed charges by chariots against the enemy chariots and the infantry skirmishing with hostile infantry. The infantry played a subsidiary role. Similarly, warfare in China under the Shang Dynasty (1766 BCE–1045 BCE) was comprised of nobles on chariots with conscripted infantry. And the latter group played a marginal role in the battlefields. Shang warfare was comprised of individual clashes between the chariot-borne noble warriors.[60]

Drews notes that the Bronze Age polities in the Eastern Mediterranean before 1200 BCE also fought amongst themselves in a similar manner. Chariots engaged hostile chariots and the infantry ineffectively skirmished with enemy foot.[61] However, during the later Bronze Age Greece, skirmishing infantry competed with chariots for battlefield supremacy. The city of Troy (Ilion or Wilusa, a city in western Asia Minor) was founded between 3000 BCE and 2600 BCE. Barry Strauss speculates that the Greeks probably attacked Troy VIi (previously called Troy VIIa) in around 1300 BCE–1180 BCE. Troy covered some 75 acres and had a population of about 7,500 people. The hinterland of Troy was known as Troad.[62] The *Iliad* tells the story of Mycenaean invasion of Troy around 1200 BCE. It describes how Hector, the Trojan hero, challenges Patroclus.[63] The *Iliad* focuses on the last two months of the 10-year-long conflict between the Greeks and Trojans. The Greek force at that time was a collection of retainers of the warrior chiefs. They lacked the capacity for undertaking the siege of a city. Strauss notes that the Trojan War did not involve the Siege of Troy but low-intensity conflicts, plundering raids against the civilians on the coast of Asia Minor, etc. The Greeks fought the Trojan chariots with infantry.[64] However, Peter Krentz asserts that the Greek force was comprised of chariots at the front and infantry at the rear.[65]

Greek warfare in the Dark Age and in the Geometric Period involved combat between small groups of aristocrats who relied on missile weapons and swords. *Monomachia* (duel of the champions) was the principal characteristic of combat. The heroes threw spears at each other and then closed for swordplay.[66] The *Iliad*'s battle scenes focus on the duels of the heroes who came to battle in chariots and then dismounted to fight in order to display their *arête* (martial prowess). The spear was used as a missile weapon.[67] Warfare in Dark Age Greece (as depicted in Homer) involved mostly raids for profit and prestige. Looting sheep and cattle were important objectives of warfare. However, Alastar Jackson claims, sometimes the heroes considered honour to be above material incentives. They fought due to *rhusia* (rights of reprisals). The heroes fought to gain and maintain honour and defended it by avenging wrongs and insults. Defending one's honour, along with martial prowess and pride were important motivations for the heroes.[68] The Homeric

heroes displayed virtues like physical strength, courage and fleetness of foot in the battlefield and cunning, wisdom and persuasiveness in the council.[69]

Warfare in Early Vedic India comprised mostly of raids. Accumulation of cattle was the principal objective of warfare. Cattle were the principal wealth in a semi-pastoral economy. Raid for capturing cows was known as *govisthi*. A successful leader of the *govisthi* was called *gojit*.[70] The Aryans constructed walled enclosures for protecting their cows against the raiders.[71] The successful chieftain, a *gojit*, legitimized his authority not only by conducting another successful raid but also by redistributing the captured cattle among his retainers and the priestly class, the Brahmins. Gradually, a successful *gojit* became a *raja*.[72]

Warfare as depicted in the Sanskrit *epics* involved duels between the heroes who fought mainly with bows and arrows. War at times was bloody. Prospects of both plunder and martyrdom encouraged the Kshatriyas to fight and die in the battlefield. Combat motivation at times was also strengthened by drinking *soma* (an alcoholic drink) before joining in a battle.[73] However, non-material incentives also played an important role in motivating the Kshatriyas. For instance, a warrior was not supposed to die peacefully in his house. Rather, he should meet death in the battlefield and then would attain heaven.[74] To an extent, warfare as depicted in the *Bhagavad Gita* was existential rather than instrumental. For instance, Lord Krishna advises Arjuna in the *Bhagavad Gita* that the Spirit is beyond destruction, as it is everlasting. Moreover, wise people understand that life and death are transitory. Krishna continues that it is the duty of the warrior to fight, regardless of cost and consequences.[75] Krishna says:

> Think thou also of thy duty and do not waver. There is no greater good for a warrior than to fight in a righteous war.
> There is a war that opens the door of heaven, Arjuna! Happy the warriors whose fate is to fight such war.
> But to forgo this fight for righteousness is to forgo thy duty and honour: is to fall into transgression. ...
> And to a man who is in honour, dishonour is more than death. ...
> In death thy glory in heaven, in victory thy glory on earth.[76]

Krishna justifies that, due to the working of the *karma* theory, those who are bound to die will die anyway. So, no sin comes to the Kshatriyas for killing the enemy in the battlefield.[77] The *Rig Veda* emphasizes that those who fight in battles and sacrifice their bodies are heroes.[78] One of the hymns of the *Rig Veda* legitimizes attacks on those who did not follow the Brahmanical religion: 'I stretch the bow for Rudra so that his arrow will strike down the hater of prayer.'[79] So, the ancient Hindus seemed to have developed a concept of holy war somewhat equivalent to that of latter-day *jihad* and crusades.

There was one basic distinction between pre-Classical Greek warfare and ancient Indian warfare. One of the principal objectives of Greek warfare during their colonization of the littoral of the Mediterranean Sea and the

Black Sea region was acquisition of slaves.[80] Acquiring slaves by the victors from the defeated enemies was absent in ancient India, partly due to the vast demographic resources of the subcontinent.

One-to-one combat in the *Iliad* reflects a formal chivalrous code. In fact, Hector refuses to use trickery.[81] W.R. Connor claims that there was a tacit understanding among the Greek polis that ambush or surprise attack was not allowed. The hoplites of a Greek polis considered such techniques as *apate* (deception) and illegitimate in a hoplite battle. In hoplite battles, prisoners were neither put to death nor enslaved but later were ransomed by their friends and relatives. And the dead body of the enemy was never mutilated.[82] After the battle, pursuit of the retreating enemy was not allowed. This rule was the product of both ideological and practical factors. The Classical Greeks considered pursuit of the retreating enemy as ungentlemanly. From a practical point of view, if the victorious hoplite phalanx broke ranks for pursuing the fleeing enemy, the victors themselves became exposed to a counter-attack by the hitherto defeated enemy force.[83] Similarly, in ancient China, writes Frank A. Kierman Jr., the code of conduct valued restraint and humanity even in wartime. The idea that one ought not to take advantage of an adversary in distress was deep rooted. But, human sacrifice after the battle was present in China,[84] unlike in ancient India.

When the Aryan tribes fought amongst themselves, they displayed certain codes to limit the quantum of violence inflicted on the opponents. The *Bhagavad Gita* emphasizes that it is not with lust and selfish thought but with inner peace that the Kshatriyas should fight just war. The *Bhagavad Gita* notes the following characteristics worthy of a true hero: inner fire, constancy, resourcefulness, courage in combat, generosity and noble leadership.[85] In accordance with the code of *yuddhadharma* (laws of war), the armies were supposed to stop fighting at sunset, and were not supposed to pursue retreating enemy soldiers, etc.[86]

Of course the *Mahabharata* is full of examples of how these codes were broken by the Aryan heroes during combat. Similarly, ancient Greek literature and sources are also full of scenes when the rules of war were broken. One famous instance as depicted by Homer is Hector's dead body mutilated by the Greeks and especially by the Greek hero Achilles.[87] But, the important fact is that such a code existed. However, no code of conduct operated when the Aryans fought the Dravidians (described in the ancient Sanskrit texts as *dasyus*). Similarly, the Greeks did not observe the rules of warfare against the Persians. For instance, Xerxes' ambassadors were murdered by the Spartans.[88] Why was there this distinction?

Co-operation is effective, writes Azar Gat, when cultural codes and especially languages are shared. Human beings display a tendency to prefer one's closer kin. Overlapping ties of kinship generate social co-operation and a sense of cultural distinctiveness. Further, ethnic differences trigger more violent aggression.[89] The ancient texts describe the Aryans as tall and fair and the Dravidians as dark skinned, of short stature with a flat nose.[90] The above

generalization explains the trend towards moderation of lethality during intra-Aryan rivalries and more lethal combat in case of Aryan-Dravidian conflicts.

If ethnocentrism is a tendency or predisposition to divide the known world and its inhabitants between superior 'us' and inferior 'them', then the Aryans displayed it long before the British in India. The Vedic and Epic literature portray the Dravidians as uncultured savages. And Brahmanical religious ideology further strengthened this ideological gulf. Religion fostered social cohesion. The common rituals and cult ceremonies strengthened and legitimized social cooperation.[91] Here, the Aryans with their well organized Brahmanical religion had a definite advantage over their non-Aryan opponents who followed various animistic cults.

The emerging social structure also tended to limit the lethality of warfare among the Aryans. The Aryans were semi-pastoral nomads organized in tribes. The intrusion of the Aryans marked the beginning of a series of Central Asian semi-nomadic and nomadic tribes entering into India through the north-western passes. And such intermittent raids continued till the early eighteenth century. As a working definition, we can categorize tribe as a group of bands. They were united by a myth of descent from a common ancestor. Gradually, *ganasanghas* (chiefdoms) emerged among the Aryan tribes. Chiefdoms could be categorized as complex tribes with a hierarchical social structure and comprised at least two ranks: nobles and common people. Chiefdoms had hereditary political leadership in the form of a hereditary chief with religious and redistributive functions. Chiefdoms differed from states in the absence of a coercive bureaucracy.[92] Romila Thapar claims that Early Vedic society was a lineage society. The power of the chiefs was based on lineage. A lineage was a corporate group of unilineal kin and accepted genealogical relationships as the principal binding factor. Several unilineal descent groups constituted a clan which traced its origin to an actual or mythical founder. The basic unit in this system was the extended family, based on three to four generations' lineage.[93]

During the Early Vedic Age, a number of *kulas* (families) with kinship ties constituted the *grama* (village). Several *gramas* came together to form a *vis* (clan in a particular district). A group of *vis* composed the *jana* (tribe). The tribe was ruled by a *rajan* (chief). In the Early Vedic Age, the *rajan* was elected by the *vis*. Later, the position of the *rajan* became hereditary. The *rajan* was assisted by the *sabha*. The *sabha* comprised the *gramanis* (village elders). Besides the *sabha*, there was the *samiti* (assembly of people of the *vis*). During the Later Vedic Age, the place of *sabha* and *samiti* as regards governance was taken by the *purohita* and the *senani*. The *purohita*, a Brahmin priest, was in charge of the religious rituals and legitimized the authority of the *rajan*. And the *senani* was in charge of the tribal militias.[94] Hopkins asserts that cow pens developed into a ranch (*ghosa*), to which a rudimentary fortified structure was added. This in turn attracted population and it became a *grama*. So, a village was a collection of houses around a fortified centre known as *durga* which

had a wall. Several *gramas* became a *nagara* (town), where the king resided.[95] Thus, we see that, towards the end of the Vedic Age, the tribal leader in charge of a collection of villages and towns was becoming a hereditary ruler and he was assisted no more by elected members of the tribe but by officials appointed by him. Thus, a transition from tribal chiefdoms towards a rudimentary state structure occurred.

As the Aryans gradually transformed themselves from a semi-pastoral nomadic group into settled agricultural populace, the *varna* (caste) system emerged. And the caste system remains one of the principal hallmarks of India's Hindu society. One of the hymns of the *Rig Veda* notes the emergence of the caste society: 'His mouth became the Brahmin; his arms were made into the Kshatriyas, his thighs the Vaisyas, and from his feet the Sudras were born.'[96] The Brahmins occupied the top layer of the caste system. They functioned as political advisors and conducted the religious rituals. They legitimized political leadership of the Kshatriyas, who formed the second layer of the *varnasrama* (caste-driven society). The Kshatriyas constituted the warrior class. Soldiering was their monopoly. The Vaisyas, who constituted the third layer, conducted trade and commerce, and the Sudras constituting the bottom of the caste pyramid were cultivators. Those outside the *chaturvarna* (fourfold caste system) were known as *nishadas* (untouchables, forest tribes, etc). In reality, the *chaturvarna* was modified and among each caste various sub-castes emerged with time. Nevertheless, the fourfold caste system functioned as a general framework for ordering society. The caste system was not static and frozen in time. Mobility existed within the system. Certain communities due to acquisition of political and military power acquired higher status within the system. Occasionally, the Dravidians as well as the foreign invaders were also integrated within the system. So, the various configurations of the *chaturvarna* changed with time and place and need to be historically contextualized.

The *chaturvarna* system laid down that fighting was the caste occupation of the Kshatriyas. And the Kshatriyas were bound together by ties of kinship and a chivalrous code. The other three castes were not in general allowed to hold arms. So, a general levy of the populace in Hindu society was not possible. In contrast, all the Athenian males aged between 18 and 60 were liable for military service.[97]

Persia, Greece and India

Historical accounts by the Greek authors supplement our knowledge about the subcontinent's history from the fourth century BCE onwards. While, in Greece, archery and chariotry vanished completely after the collapse of the Bronze Age Civilization, in India this was not the case. And the primacy of infantry which was a characteristic feature of Greek warfare from the Later Dark Age did not occur in India.

Victor Davis Hanson asserts that the Greeks around 750 BCE invented the concept of decisive battles which involved shock and direct assault on the enemy.[98] While Drews argues that the infantry supremacy in Greece started in 1200 BCE, Hanson pushes the date to five centuries later. However, to be fair to Drews, he writes that around 1200 BCE, 'barbarian' infantry did not fight in close quarter formation but the genesis for close-order infantry battle started soon after the collapse of the Bronze Age Civilization (also termed by him as the 'Catastrophe').[99] The decisive battle, claims Hanson, comprised of clashes by heavy-armoured infantry known as hoplites who were arranged in the phalanx formation. The infantry soldiers were farmers who constituted Classical Greece's middle class. Phalanx warfare did not involve fluid individual combat but a matter of shock and pushing. Hence, the hoplites carried large spears, shields and bronze armour.[100] After 750 BCE, the round two-handed shield, the Corinthian helmet and greaves (metal leg protectors) became common in Greece. And in the fifth century BCE, hoplites (long-spear-bearing infantry) organized in phalanx became common.[101] The hoplite phalanx was generally organized as eight deep, and the spears of the first three ranks protruded forward and reached the enemy line during close-quarter combat.[102] The last five ranks pushed the first three ranks towards the enemy, till one side cracked. This push was known as *osthismos*.[103] Face-to-face killing in close-encounter battle was considered heroic and normal by the Greeks. The Greeks looked down upon killing from a distance. Hence, skirmishers, javelin throwers, slingers and archers played a marginal role in Classical Greek battles. Hanson asserts that the objective of Greek warfare was either decisive victory or total defeat.[104]

Back in India, the Later Vedic Age witnessed the slow transition from a pastoral to an agriculture-based economy, especially in the Ganga-Jamuna Doab.[105] The tribal political organization of the Early Vedic Age was slowly transformed into territorial states by the Later Vedic era. Around 600 BCE, 16 *mahajanapadas* emerged in North and North-West India. They were Gandhara, Kamboja, Asaka, Surasena, Vatsa, Avanti, Chedi, Malla, Kuru, Panchala, Matsa, Vajji, Anga, Kasi, Kosala and Magadha. Each *mahajanapada* was comprised of urban centres and a *janapada* (agricultural heartland). Kasi was the most economically powerful *mahajanapada* as it was the leading centre of textile manufacture.[106] The *setthis* (artisans and the traders) of the *mahajanapadas* engaged in trade and industry.[107] The king lived in a walled town. The king became the keeper/protector of wealth of his subjects.[108]

From a political and military perspective, Magadha was the most important *mahajanapada*. Magadha comprised of Patna and Gaya districts of present-day Bihar. Magadha's capital was Rajagriha (also known as Girivraja) and it had excellent natural defensive fortifications in the shape of five hills which surrounded the city. From the political perspective, Magadha was most centralized as it was ruled by a series of absolute rulers. In contrast, the Vajji state, which was located between the River Ganga and Nepal, was a confederation of eight clans and the Lichchavis were most important among

them. Similarly, the Kuru (Delhi-Meerut region), Panchala (Farukhabad in Rohilkhand) and the Matsyas (Jaipur-Bharatpur-Alwar region of Rajasthan) were also tribal polities.[109] Several tribes fused with each other to constitute territorial units. For instance, the Bharata and Puru tribes of the Rig Vedic era merged with each other to constitute the Kuru principality.[110]

The *dharmasutras* were composed around 500 BCE. These texts legitimize the authority of the hereditary *rajans* known as *rajas* (kings). It was laid down that the duty of the *raja* was to protect his subjects from internal and external enemies, to provide justice, provide special support to the Brahmin scholars and, most importantly, to lead the army in battle.[111]

The first important ruler of Magadha was Bimbisara, who ascended the throne in the second half of the sixth century BCE. He annexed Anga and Kasi. Agricultural wealth aided the urbanization wave across North India. We are told that Bimbisara's expanding kingdom was comprised of numerous cities. In the ancient sources, Bimbisara is described as a *seniya*. It means one with *sainya/sena* (soldiers). Probably, Bimbisara was the first Indian ruler in history who maintained a standing army.[112] Bimbisara maintained several *sena-nayakas mahamattas* (generals).[113] By 600 BCE, rather than raids, organized violence geared for acquiring agricultural territory became the norm of warfare in ancient India.

It seems that the transition to polities and rise of a standing army occurred much earlier in China, Mesopotamia and Egypt compared to India. Under the Shang Dynasty (1766 BCE–1045 BCE), raiding between villages was replaced by organized violence conducted by the standing royal army. The king commanded in person and was assisted by a rudimentary bureaucracy. The size of an expeditionary force varied between 3,000 and 13,000 men. At times, a particular military expedition, punctuated by occasional battles, also lasted for about three months.[114] Drews asserts that in around the ninth century BCE, the militia was replaced by a standing army (including infantry) in Assyria.[115] In Persia, under the Achaemenid Empire (559 BCE–331 BCE), males were liable for military service between the age of 20 and 50. The Achaemenid standing army (which derived its tradition from the earlier Mesopotamian empires) included a contingent of 3,000-strong cavalry under the Master of Horse. The horses were supplied from the studs of the central government. Most of the personnel were members of the Persian nobility.[116]

In Greece, the transition towards a standing army occurred more or less around the same time as in India. From 600 BCE onwards, in most of the Greek city states military training started for the young males when they were 18. Most of the Greek city states were organized on a territorial basis and citizen registers were kept in the smallest sub-division of the tribe known a *phratry*. The commander of each of the tribal units maintained his own list of all citizens available for hoplite service on the basis of these registers.[117]

Bimbisara was assassinated by his son Ajatasatru (r. 516 BCE–489 BCE). He fortified Rajagriha and established a fortified centre known as Pataligrama (later Pataliputra) near the junction of the Son and Ganga rivers. From the

Buddhist Pali texts, we know that Ajatasatru annexed Kosala and Vaishali.[118] The people of Magadha were famous for *matangayuddha* (fighting from the back of elephants).[119] As the semi-pastoralist Aryans were transformed into settled agricultural communities, they constructed fortifications of earth and wood. Elephants became useful for smashing such fortifications.[120] And elephants as we will see later played an important role against Alexander's army at the Battle of Hydaspes. Sarva Daman Singh opines that the proto-Australoids domesticated and trained elephants. The pre-Aryan people of India speaking Austric languages tamed the elephants. The Aryans picked up their tradition. The *Atharva Veda* speaks of capturing wild elephants and then training them. And the *Mahabharata* speaks of using elephants in war.[121] In China, elephants were trained and tamed during the Shang Dynasty. Elephants and *mahouts* (elephant drivers) were sent to the Han court as tributes by the polities in Indo-China. As regards use of war elephants, in 506 BCE, the Ch'u Army used elephants against the Wu. However, the use of elephants in war became rare in China. Partly this was due to extinction of the elephants due to environmental factors.[122]

The successful Magadhan campaigns against the neighbouring states witnessed two military technological innovations/MTRs. One was the *rathamusala* and another was the *mahasilakantika*. The *mahasilakantika* was a huge catapult designed to throw stones and rocks against enemy fortifications. The *rathamusala* was a chariot with knives protruding outwards attached either to the chariot's body or to the spoke of the wheel. The knives were designed to mow down enemy infantry as well as to damage the wheels of the hostile party as the *rathamusala* was driven towards the enemy rank at high speed. So, *rathamusala* was a scythe chariot.[123]

The origin of the scythe chariot is still uncertain. Alexander K. Nefiodkin asserts that the scythe chariots emerged in Persia. It was the Persian response to the heavy Greek infantry organized in tight phalanx formation. Nefiodkin cites Xenophon who had written that armed chariots were present in Cyrus's time. Nefiodkin continues that scythe chariots were operationalized in Persia between 467 and 458 BCE. In 396 BCE, Pharnabazus, *Satrap* of Hellespontine Phrygia, used scythe chariots at the Battle of Daskyleion (396 BCE).[124] According to I.G. Spence, Pharnabazus used two scythe chariots against Spartan King Agesilaus's phalanx in 395 BCE in Asia Minor.[125]

Nefiodkin does not take into account military developments in ancient India. At least 100 years before Persia started experimenting with the scythe chariot, Magadha had already deployed them. So, it is probable that scythe chariots first emerged for combat in the North Indian plains and then passed into Persia probably through the Indian military mercenaries who were employed by Xerxes. Herodotus tells us that both Indian infantry and cavalry accompanied Xerxes into Greece. Further, an Indian contingent fought at Plataea.[126]

The arrow-firing catapult was first invented in Syracuse and first used in war by Dionysius I of Syracuse against Carthage in 397 BCE. The Greek

engineers under Alexander the Great developed torsion catapults which he used during his campaigns in Western Asia and around the Jaxartes river.[127] Barton C. Hacker writes that the Greeks came up with two types of torsion catapults: *euthytonon*, an arrow shooting machine, and the *palintonon*, which was a stone thrower. Both types were stand mounted and spanned by winch, supplemented in larger machines by pulleys. Like earlier machines, they used a slider in a grooved stock. The arms of both these two machines operated horizontally.[128] We could argue that the catapults first came up in Magadha and then spread into Western Asia through the Persians or that catapults were invented separately first in Magadha and also in West Asia. Later, these machines were further developed by the Greeks and the Romans. So, one could argue that Bimbisara and his son Ajatasatru, by inventing the scythe chariot and catapults, initiated a sort of RMA in ancient India by integrating the two MTRs. This RMA which gradually absorbed the use of elephants in battle was part of the Military Transformation which had started in the subcontinent with the introduction of horse-drawn chariots and iron weapons in around 1200 BCE. This explains to an extent the rise of Magadha as the centre of power which later transformed itself into the Nanda and finally the Maurya empires.

The Achaemenid Persian Empire (559 BCE–330 BCE), the contemporary superpower, posed a military threat to North-West India in around the sixth century BCE. Three hundred years later, Macedonian-Greek imperialism imperilled India's North-West Frontier. The Achaemenid Admiral Scylax (a Greek mercenary in Persian service) led a maritime reconnaissance mission before the campaign against India was launched. Scylax sailed from Indus to Suez and thus established the first maritime linkage between the Indus, the Arabian Sea and the Red Sea.[129] Whether the *mahajanapadas* possessed any riverine or maritime capabilities cannot be answered at the present state of knowledge.

Around the mid-sixth century BCE, Cyrus II (b. 575 BCE; d. 530 BCE; r. from 559 BCE), the Achaemenid Emperor occupied Gandhara, Kamboja and the region west of the Indus. Gandhara which became the twentieth *satrapy* of the Achaemenid Empire was the richest and most populous province in the whole Achaemenid realm.[130] There is no doubt that the Persians enjoyed quantitative as well as qualitative military superiority over the Indians. Hence, it is fruitful to have a look at the Persian military system. Kaveh Farrokh speculates that the Achaemenid Empire at its height could have mobilized 70,000 to 150,000 soldiers. Farrokh tells us that the Persians adopted the Assyrian siege techniques, which involved use of scaling ladders and battering rams, as well as the practice of sapping. In land battles, the Persians deployed infantry equipped with spears, and both foot archers and horse archers.[131] Philip de Souza asserts that the Persians were organized in a division of 10,000 known as *baivarabam* commanded by *baivarpatish*.[132] Each body of 1,000 troops known as *hazarbam* commanded by *hazarpatish* was further subdivided into groups of 100 each known as *sataba*. And each *sataba* comprised 10 units of 10 men each known as *dathaba*.[133] The Indian armies had spearmen and foot archers. But mounted archery was a novelty for the forces of

the *mahajanapadas*. However, in the battles against Alexander, the Persians did not deploy horse archers. Further, the Persians also had heavy cavalry. The Massagetae Sakas of Turkestan first experimented with heavy cavalry equipped with lances. The Achaemenids adopted this weapon system by the end of the fifth century BCE. The heavy Persian cavalry carried two spears. During the late fifth century BCE, the heavy Persian cavaliers wore cuirasses and their mounts had armoured saddles and breastplates. By the fourth century BCE, heavy Persian cavalry had arm guards. Eastern Persian and Saka cavalry in Achaemenid service wore scale armour, cuirasses and helmets.[134] The Indian horses, Herodotus rightly notes, were inferior compared to the Median horses used by the Persians.[135]

The Achaemenid Great King Darius I (r. 522 BCE–486 BCE) led an expedition against the Scythians in 513 BCE and annexed Thrace in his expanding empire.[136] In 491 BCE, Darius I sent an expedition against mainland Greece. The invasion force comprised 25,000 soldiers including 1,000 cavalry in 600 ships. Datis led a force of some 20,000 men into Attica.[137] On 12 August, at Marathon (490 BCE), some 24 miles north-east of Athens, the Persian light infantry, which was no match vis-a-vis the Greek heavy infantry in close quarter combat, was massacred by the 9,000 Athenian hoplites.[138] According to one historian, some 6,400 Persians died at Marathon. The battle started at six in the morning. The Athenians thinned their centre (three to four ranks) and massed troops at the two wings. The objective was to crush the two wings of the Persian Army. The Athenians assessed rightly that Datis and Artapharnes had placed the crack troops at the centre and second rate units at the wings. Artapharnes had deployed his troops between Mount Kotroni and the sea shore. The archers were at the front and then came the Persian infantry. When the Greeks came in range of the Persian archers (150 yards), the Greek infantry marched at double speed in order to get through the hail of the arrows as quickly as possible and then engage the Persians at close-quarter combat. In close-quarter combat, Greek discipline, Greek weapons (long spears against Persian javelins and Greek short swords against Persian daggers and scimitars) and Greek armour (bronze cuirass and shields [quilted jerkins and padded cuirass of linen and cloth caps for protecting the head and wicker shields of the Persians] proved superior against those of their opponents).[139] When the Athenian heavy infantry was marching rapidly towards the Persian infantry, the former were vulnerable to attacks on their flanks and rear by the Persian cavalry. George Cawkwell asserts that the powerful Persian cavalry was not involved against the Athenian infantry.[140] Probably the Athenians, due to the information leaked by the Ionian Greeks in the Persian camp, attacked when the Persians were in a process of embarking their cavalry on the ships for a voyage around southern Attica to attack Athens from the sea. Even if some Persian cavalry were present at the flanks of the Persian infantry, the narrow and marshy terrain at Marathon prevented their proper deployment.[141] So, Marathon did not represent the superiority of Greek heavy infantry over the Persian cavalry-light infantry system. Hanson

and Peter Green's claim that the Greeks fought better because they were free men compared to the Persians, whose unfree subjects were driven forward by lash,[142] is not sustainable. In history, combat motivation of the armies of the totalitarian states (*Wehrmacht* and Red Army in modern times) had proved superior compared to the fighting spirit of the democratic countries. Further, the Persian Army must have been buoyed up by constant victories which they had gained in the last two hundred years before Marathon.

Greek victory at Marathon did not end the Persian threat to Greece. Xerxes ascended the Achaemenid throne after Darius I in 486 BCE. In 480 BCE, he began the invasion of Greece with some 150,000 men.[143] At Thermopylae, Leonidas had 4,000 men (including 300 Spartiates).[144] After the Persian naval defeat at Salamis, Xerxes' army started its withdrawal and marched out through Boeotia. Xerxes left a part of the army under Mardonius at Thessaly with orders that, in the following spring, the latter should make an advance towards the Peloponnese.[145] The German military historian Hans Delbruck opines that, both at Marathon and at Plataea (479 BCE), the Persians did not enjoy numerical superiority.[146] At Plataea, Mardonius deployed the Persians against the Spartans. On the right of the Persians were the Medes, who faced the Greek contingents from Corinth, Potidaea and Sicyon.[147] The Persian infantry was defeated at Plataea because they lacked body armour like the hoplites and were not trained to fight in ordered formation.[148] Herodotus noted: 'in courage and strength they were as good as their adversaries, but they were deficient in armour, untrained and greatly inferior in skill'.[149]

Hanson in an article asserts that between the sixth and fifth centuries, Greek infantry warfare was changing slowly. The Greek generals became aware of maneuvers which involved increasing the depth of part of the phalanx, use of reserve force, use of specialized contingents, etc.[150] However, a revolutionary break in warfare came with the changes introduced by Philip of Macedon and his son Alexander. Hanson asserts that Philip of Macedon and his son Alexander the Great initiated a Military Revolution, which unfolded between 362 BCE and 336 BCE.[151] Hanson continues:

> Classical Age had radically altered warfare through the unique idea of decisive battle, in which free men crafted conflict as a decisive face-to-face collision of shock troops, so the fourth century ushered in the logical conclusion to the entire Greek discovery of decisive engagement: total and absolute fighting as a natural extension of social and economic life. ... The tragedy – and the legacy which we still today bear in the West.[152]

About one and half decade before Hanson, Arthur Ferrill in a powerful book asserted: 'Between the end of the Peloponnesian War in 404 and the accession of Alexander the Great in 336 a military revolution in the Greek world changed the nature of ancient warfare and produced one of the finest armies

in the military history of the western world.'[153] Alexander's signal contribution in Hanson's view was to pursue the defeated enemy force to destruction. Thus, elimination, and not defeat of the enemy armies, was Alexander's aim.[154] Hanson has found elements of the beginning of Total War in Classical Age Greece. The 'Military Revolution' initiated by the Macedonian father and son in Hanson and Ferrill's view is more important and has greater lasting effect than Geoffrey Parker's Military Revolution of the early modern era (i.e. 1500–1700). It is to be noted that Hanson is primarily a historian of Classical Greek warfare, while Parker's specialization is early modern West European warfare. And both historians claim that the West in their era of specialization experienced a Military Revolution.

Peter G. Tsouras asserts that Philip II of Macedon (383 BCE–336 BCE; r. from 359 BCE), for the first time in Europe created a standing army.[155] Before the emergence of the professional Macedonian Army of Philip II, only the Spartans raised full-time professional soldiers who were supported by the helots.[156] If this was the case, then we must conclude that standing armies came into existence much earlier in Asia. Philip integrated the 'Oriental' cavalry tradition with the Greek tradition of heavy infantry. The Greek military tradition was also changing with time. The Spartan King Agesilaus II, while campaigning in Asia Minor in 396 BCE, realized the necessity of possessing a cavalry force for dominating the large open plains. In 401 BCE, Xenophon (428 BCE–354 BCE) joined the army of Cyrus the Younger for his march 'upcountry'. After his experience at Cunaxa, Xenophon had also come to the same conclusion.[157] In fact, Macedonia was ideal horse country with its broad, well-watered pastures and fields. Philip's force was comprised of the Foot Companions and the Companion Cavalry. The Companion Cavalry was divided into permanent squadrons. The depth of the phalanx was increased from eight to 16 men. The traditional phalanx comprising of Greek citizens was a militia and could not manoeuver once it had been set into motion. However, Philip's men were able to manoeuver efficiently because the phalanx was organized into permanent regiments of 1,500 men each.[158] Philip II increased the length of the spears. While the hoplite spear was about eight to nine feet, the Macedonian phalangites used both hands to hold the pikes, whose length was about 16 feet (known as sarissas) and later increased to 20 feet under Alexander's successors. The pike was fitted with a heavier point and a bronze butt. Each pike weighed about 6.5 kg, which means it was seven times heavier than the hoplite spear.[159] The first five ranks of the phalanx advanced with leveled sarissas, while the rest of the ranks held their sarissas in a rising arc which deflected descending arrows, javelins and sling stones shot by the hostile party.[160] While battles in the Archaic Age were fought only during the summer by Greek farmer-soldiers, Philip created an all-weather army.[161]

For administrative and tactical purposes, the cavalry and infantry were organized in permanent units. The lowest tactical unit of the infantry was *dekas* (file of 10 men) which expanded to 16 men under Alexander. Sixteen such

dekas formed a *lochos* later known as *syntagma* which comprised 256 soldiers and was commanded by a *lochagos*. Six *lochoi* comprised a *taxis* (1,536 men). Occasionally four *lochois* were combined to form a *chiliarchy* (1,024 men). In times of war, occasionally a *chiliarchy* was divided into two *pentakosiarchy* (each of 512 men). A commander commanding a *taxis* had several *ektaktoi* for distributing his orders among the men under his command. Each cavalry squadron (*ile*) comprised 200 men organized in four *tetrarchies*. Two to four squadrons combined to form a cavalry brigade known as *hipparchy* commanded by a *hipparch*. The trooper was equipped with long spear known as xyston which was used to stab at the faces of enemy riders and horses. The sword slung under the left arm was used as a secondary weapon. Greek cavalry did not carry shields. The heavy cavalry known as Companion Cavalry had a cuirass which was made of small metal plates linked together and covered with leather or linen.[162] In 338 BCE at the Battle of Chaeronea, Philip commanded an army of 30,000 infantry and 2,000 cavalry.[163]

Philip's son Alexander III was born on 20 July 356 BCE. Alexander's rise to world fame was due to his destruction of the Achaemenid Empire in three set-piece battles. While at Issus (333 BCE), Alexander had some 30,000 soldiers; at Arbela/Gaugemela (1 October 331 BCE), Alexander deployed 47,000 soldiers. In the spring of 327 BCE, after two years of campaigning in Bactria and Sogdiana, Alexander crossed the Hindu Kush Mountains (4,000 metres high) with 30,000 troops. Then, he moved towards Kabul.[164] In March 326 BCE, Alexander arrived at Taxila. In June, Alexander moved towards Hydaspes (Jhelum), which marked the western boundary of Porus's kingdom. The Greeks marched through the Salt Range along the Old Royal Highway which ran through Chakwal and Nandana to Girjak (Jalalpur Sharif).[165] Paurava (Greeks called him Porus), king of Punjab, opposed Alexander. The Vedic era force structure was comprised of infantry and warriors on the *rathas* (chariots). The two-fold system was transformed into *Chaturanga Bala/Chaturanga Vahini* (four-fold army) which was comprised of infantry, chariots, *asva* (cavalry) and *hasti* (elephants) by about 350 BCE.[166]

In 326 BCE, the two armies were deployed on either bank of the Hydaspes (Jhelum) opposite to each other. Alexander did not attempt a crossing of the Hydaspes in the face of Porus's army because he was afraid that the Greek horses would shy away from the elephants.[167] When Alexander with 11,000 men (including 5,000 cavalry) was crossing the Hydaspes river upstream, about 18 miles from the camp of Porus, the latter's son came to check Alexander's landfall on the river bank with 60 chariots and 2,000 infantry. Alexander sent his horse archers to drive away the Indian chariots.[168] Once Alexander destroyed the advance guard under Porus's son, he advanced against the main army deployed by Porus on the bank of the Hydaspes. Porus had under him 4,000 cavalry, 300 chariots, 200 elephants and 30,000 infantry.[169]

At Hydaspes (May 326 BCE), Alexander had 5,000 cavalry against 4,000 cavalry of Porus. The phalanx was deployed in the centre with cavalry on both the flanks. The right wing cavalry along the river bank was commanded

by Coenus.[170] Q. Curtius Rufus provides an account of Porus's army. At the van, 85 elephants were posted. Behind them, 240 chariots were deployed. And behind the chariots 30,000 infantry were deployed. Porus was in the centre and directed the battle from the back of an elephant.[171] Here a slow transition in the military system of ancient India was evident. Unlike in the Vedic Age when the ruler commanded from a chariot, in the early fourth century BCE, the ruler commanded from the back of an elephant. It shows the gradual rise of importance of elephants at the cost of chariots within the chariot-centric military system. The first line of Porus was comprised of elephants, and each of the animals was stationed 100 feet apart from each other. The American military historian Theodore Ayrault Dodge calculates that the elephant line was about four miles long. J.R. Hamilton writes that the total length of the Indian line was about five miles. The infantry comprised the second line behind the elephant line. The Indian infantry was geared to advance in between the elephants and engage the Macedonian infantry and provide support to the elephants. Thus, we see a sort of combined-arms tactical doctrine in Porus's army. Two thousand cavalry were posted on the right flank and another 2,000 on the left flank of the Indian line. In front of the cavalry, chariots were stationed on each of the flanks.[172] Porus relied on chariots and elephants to defeat the Greeks.

The Assyrian chariot, writes Richard A. Gabriel, was a larger and heavier vehicle. Each vehicle was pulled by three horses and carried a crew of four. The Assyrian chariots were used as shock weapons against the hostile infantry. Once engaged, the crews often dismounted and fought as infantry. The Assyrian chariots somewhat functioned like the modern armoured personnel carriers.[173] Between the early Vedic era and Paurava's time, the chariots had evolved slowly. From a light vehicle drawn by two horses and carrying the driver and a warrior, the chariots around 300 BCE had become bigger. Paurava's chariots were big vehicles. Each chariot drawn by four horses had six persons: two drivers for controlling four to six horses, two soldiers equipped with shields for defensive purposes and two warriors equipped with bows and arrows. The ground was muddy due to rainfall in the night before the battle. Hence, the chariots became virtually immobile and proved to be easy targets for the Greek cavalry and infantry.[174]

Herodotus provides a description of the Indian infantry which marched under Xerxes during the invasion of Greece: 'The Indians were dressed in cotton; they carried cane bows and cane arrows tipped with iron.'[175] Some of the infantry carried long bows which shot three-foot arrows. As they shot, the archers had to rest one end of the bows on the ground. Thus, the rate of fire was slow.[176] Worse, the ground at Hydaspes was slippery due to rainfall in the night before the battle. Hence, the Indian archers could not get a firm grip on their big bows. Arrian's observations were more or less similar. The Indian infantry wore cotton cloth. The upper garment reached up to the shoulders and the lower garment to the ankles. They covered their heads with turbans (folds of copper cloth) and *sandals* (shoes of white leather with thick soles).[177]

The latter were obviously good for long distance marching. Both Herodotus and Arrian confirm that the Indian infantry did not wear heavy armour. This was probably due to the hot climate of India and also because, rather than close-quarter combat with swords and spears, they fought from a distance with bows and arrows. In China, during the late Warring States period (circa fourth century BCE), iron helmets of the infantry were comprised of several plates of iron, which were laced together through holes, had become common.[178]

Military Revolution or not, Alexander's victory was not inevitable. When Alexander was forming his infantry who had just crossed the river and were organizing themselves in a phalanx, then a few squadrons of Greek cavalry screened their front. At that time, if Porus, whose army was already organized in battle formation, had attacked the unready Greek Army with his elephants, then all hell would have broken loose upon the Macedonian 'world conqueror'.[179] But, Porus like Darius at Arbela, maintained a defensive stance. And thus the brief window of opportunity which had appeared for the Indian side vanished. Here lies the importance of event-oriented history.

Once Alexander had formed his line, he attacked aggressively. The Greeks were not afraid of the chariots as they had met such machines earlier during their confrontations with the Persian Army. The Greek cavalry was afraid of elephants. Alexander decided to turn the flanks of the Indian Army with his cavalry. He sent Coenus and Demetrius to attack the Indian cavalry on their right wing and he himself led the other mounted warriors against the Indian cavalry on the left wing of the Indian side. Coenus and Demetrius drove away Indian cavalry on the right side of the Indian line and then joined Alexander in his attack on the Indian cavalry on the left wing of Porus's force. Soon, the Indian cavalry on Porus's left wing was defeated and retreated. The Greek cavalry was qualitatively and quantitatively superior compared to the Indian cavalry. Superior discipline and training were the reasons behind the victory of the Greek cavalry. Then, the Greek cavalry surrounded the Indian Army from all sides and attacked. The Greek light infantry also advanced and attacked the elephants and supporting Indian infantry. The Dahae horse archers in Alexander's army (a gift from the Persian *Satrap* of Sogdiana who was also the father of Alexander's bride Roxanne) shot at the Indians from a distance.[180] These horse archers are the warriors of the near future who would be the crucial players in the land mass of Eurasia for the next 1,500 years. The greatest killers on the Indian side at Hydaspes were the elephants, which proved more effective than the chariots. Q. Curtius Rufus writes: 'The elephants are more powerful than those tamed in Africa, and their size corresponds to their strength.'[181] Seleucus himself leading the hypaspists on the right wing of the Greek infantry attacked the elephants and gained a lasting admiration for such war animals.[182] The next chapter will show that the elephants influenced the Greek art of war in the post-Alexander age.

The Persian casualties at Gaugemela/Arbela (331 BCE) cannot be determined with certainty. Arrian and Diodoros exaggerate the Persian loss. For Arrian, the figure is 300,000 Persian dead and for Diodoros the figure is

90,000 dead Persians. Curtius gives the lowest figure for Persian loss, i.e. 40,000. Arrian provides the lowest figure for Alexander's casualties, i.e. 100. For Curtius, Alexander's army suffered a loss of some 300 men. Diodoros provide the highest figure which is 500.[183] We can speculate that the Greek and Latin authors, while calculating the Persian loss, also included the non-combatants. And as far as the Greek Army was concerned, only the casualties of the combatants were given. Anyway, it is also true that a defeated army suffers much greater casualties compared to the victorious one. But, such huge discrepancy is questionable. About the loss of the Indians at Hydaspes, Arrian gives the highest figure. Arrian writes that 20,000 infantry and 3,000 cavalry of Porus were killed. Diodoros comes up with a slightly lower figure saying that 12,000 soldiers of Porus died and 9,000 became prisoners. About Alexander's loss in the Battle of Hydaspes, Arrian gives the lowest figure (310) and Diodoros provides the figure of 280 Macedonian cavalry and more than 700 infantry who died.[184] These figures are interesting. Both Arrian and Diodoros accept that Alexander's army suffered greater casualties at Hydaspes compared to Gaugemela, which was the biggest battle that Alexander fought against the Persian Empire. And these two historians accept that lesser number of Indians died compared to the Persians. In other words, it seems that the combat effectiveness of the force of a small Indian regional kingdom was greater than the much vaunted army of the ancient world's superpower, Persia. However, the Persian Army had defeated the *mahajanapadas* earlier. That means that, between the time of Bimbisara and Porus, the combat effectiveness of the Indian armies had gone up. Sawyer concludes that during the Warring States era (403 BCE–221 BCE), chariots lost their usefulness and mass infantry occupied the centrepiece of the Chinese military organizations.[185] In India, chariots became marginal in the fourth century BCE and especially in the post-Hydaspes era. So, the Indian military system was dynamic and constantly evolving and not static.

The art of fortification among the Indians became more complex after the collapse of the Indus Valley Civilization. The *Ramayana* speaks of Lanka (the capital of Ravana) as surrounded by four *parikhas* (wet ditches). To prevent the enemy soldiers from swimming the ditches, the latter were filed with alligators. For defending the outer ditches, there were bridges for the garrisons to cross over.[186] The Hittites (1800 BCE–1200 BCE) learnt the use of battering rams from the Hurrians. The ram was transported over the moat of a hostile city by building an earthen platform.[187] The Hittite capital Hattusa had an outer city wall with monumental gateways.[188]

Alexander conducted several sieges against some of the principalities in the north-west of the subcontinent. The movable tower and ballistae, the two technological advantages enjoyed by Alexander, overwhelmed the defenders physically and psychologically. Aurel Stein notes that Alexander's catapults' and ballistas' range was about 300 yards.[189] Probably the Phoenicians used the torsion principle in the catapults. Alexander used torsion catapults during the Siege of Tyre (333 BCE –32 BCE).[190] These two MTRs comprised an RMA

in the field of siege warfare which gave Alexander a technical edge over the peripheral Indian powers. Magadha had stone-throwing machines for the last two centuries before Alexander's invasion. But, this MTR did not reach the outlying regions of the north-west corner of the subcontinent. During Alexander's invasion, North-West India was still organized along tribal republics. The huge demographic resources of the subcontinent enabled even relatively small Indian powers as in the case of the polities of ancient China to raise quantitatively impressive (if not always qualitatively) armies. Let us analyse some of the sieges in detail.

Arrian says that one of the cities of the Aspasians was fortified by double walls.[191] The Aspasians (Asvakas) inhabited the Alisang-Kunar Valley. After this tribe was defeated, Alexander was reputed to capture 40,000 men and 2,30,000 oxen. And some of the oxen were sent to Macedonia and put to use for agricultural work.[192]

Next came the turn of the Asakenois (Asmakas), who controlled Swat and Buner valleys. They raised 20,000 cavalry, 30,000 infantry (including 7,000 Indian mercenaries) and 30 elephants. Rice cultivation along the fertile Swat Valley enabled the Asakenois to raise such a large number of troops. It is to be noted that the Asakenois had more cavalry but a lesser number of elephants compared to Porus. In comparison to the polities inside the subcontinent, these tribal organizations (republics) were able to raise a large number of cavalry because they had access to horses from Afghanistan (especially Gandhara, later known as Kandahar). In contrast, the rulers of Punjab and Magadha had to import horses with difficulty from beyond the borders of India. However, the rulers east of Indus had access to the good elephant forests which sprawled across India, stretching from central Punjab, Delhi-Agra region to Malwa and Peninsular India in the south and Orissa, Bengal and Assam in the east. The Asakenois' capital was Massaga/Mazaga, which was a commercial mart.[193] Q. Curtius Rufus writes that the city of Mazaga was surrounded by a wall which had a basis of stonework that supported the superstructure of unburnt sun-dried bricks. The brickwork with the help of stones and moist clay was converted into a formidable structure.[194] Alexander ordered the construction of movable towers (a novelty in India) for driving away the defenders shooting at his men from the ramparts with bows and arrows and javelins.[195]

After establishing garrisons at Ora, Massaga and Bazira (Bir Kot Hill at the junction of Kandag and Karakar valleys), Alexander proceeded south to the Peshawar Valley and then east of the Kabul river. On hearing of the fall of Ora, the Asakenoi decided to make a last stand at the Rock of Aornos. Aornos is situated on the right bank of the Indus. Stein identifies the Rock of Aornos with the Pir Sar Ridge. Pir Sar is a series of narrow spurs which stretches east from above Upal and flattens at the plateau of Maira. The average elevation is about 7,100 feet and the Rock of Aornos stretches for more than one and a half miles. The upper end of the Rock is flat. Pir Sar dominates all the other spurs in the ridge. The Siege of the Rock of Aornos

could be dated around April 326 BCE. The siege continued for seven days. Alexander ordered the ravine to be filled up with a mound and then put catapults over it. The trees of the surrounding forest were cut to provide logs for constructing the mound. And while the catapult was put over it, the archers of the Greek Army protected their workers from the hostile garrison. According to one author, the siege engines used by the Greeks had a range of 300 metres. When the Asakenoi saw that the catapult was ready to fire, they vacated their stronghold in the dead of night.[196]

In August 326 BCE, Alexander crossed the River Ravi and defeated the Aristas/Adraistai. Alexander then moved towards Sangala, the principal stronghold of the Kathas/Kathaians. Porus, who had become a vassal of Alexander, joined the Greek besieging force with 5,000 troops. When the fort fell to the Greeks, some 17,000 Katha defenders had died. The Greeks captured 70,000 men (including non-combatants), 300 wagons and 500 cavalry. Next Alexander defeated the Siboi/Sivis along the west bank of the Indus, who had 40,000 infantry. Then came the turn of the Agalassoi/Agalassians. They had 40,000 infantry and 3,000 cavalry. The first Greek attack was repulsed but they went down under the next assault. Many defenders with their families cast themselves into flames. Uma Prasad Thapliyal rightly notes that this was the precursor of the medieval Rajput *jauhar* practice.[197]

Conclusion

The objectives of the pre-Alexander Greek warfare, write Graham Shipley and Everett L. Wheeler, were limited. The objectives were replacement of one ruling dynasty by another. Gathering tribute from the defeated enemies was common. Annihilation of the defeated parties was rare and exemplary.[198] The rules of the game were changed by Alexander. The observation of Shipley and Wheeler also applies for warfare in ancient India. Between the collapse of the Indus Valley Civilization and Alexander's invasion of India, warfare in South Asia also registered significant changes. The tribal militias were replaced by the standing armies and the supremacy of the chariots was challenged towards the end of 300 BCE. Whether Greece experienced a Military Revolution under Philip and Alexander is doubtful, but it is clear that the nature of warfare changed considerably. Rather than merely advanced technology, innovative tactics and political ambition of Alexander was also responsible for the rise of Greek military power in Asia. The Greek and the Indian military traditions did not emerge in complete isolation. Both the military systems borrowed from the existing Middle Eastern military traditions. Both the Greek and Indian military systems registered selection and fusion of elements taken from other neighbouring military systems. One could argue that North India also experienced an RMA in around 500 BCE. This got fused with the earlier RMA initiated by the Indo-Aryans around 1200 BCE. These two RMAs interacted with each other like a DNA double helix and generated a slow Military Transformation centred round the primacy of chariots. However,

Hydaspes proved that, by 300 BCE, the military system of ancient India needed to be revamped. The chariots which had transformed Indian warfare from around 1200 BCE became obsolete. Elephants and horses registered their usefulness. Further, slow and gradual changes were occurring in the sphere of siege warfare. And this set the stage for the rise of the pan-Indian empires and new methods of warfare, the subject of the next chapter.

Notes

1 Archeologists and historians still differ as regards dating the entry of the Aryans. For some, the Aryans came into the subcontinent around 1500 BCE. Thomas R. Trautmann, 'Introduction', in Trautmann (ed.), *The Aryan Debate*, New Delhi: Oxford University Press, 2005, p. xiii.
2 Irfan Habib, *A People's History of India, 2, The Indus Civilization including other Copper Age Cultures and History of Language Change till c. 1500 BC*, New Delhi: Tulika, 2002, pp. 4–5.
3 D.N. Jha, *Ancient India in Historical Outline*, 1977, reprint, New Delhi: Manohar, 2003, p. 28.
4 Habib, *The Indus Civilization*, p. 26.
5 Arthur Ferrill, *The Origins of War: From Stone Age to Alexander the Great*, 1985, reprint, London: Thames and Hudson, 1988, p. 38.
6 Jha, *Ancient India*, p. 29.
7 D.P. Agrawal, 'Protohistoric Chronology and Technology and Ecological Factors: A Synthesis', in B.P. Sahu (ed.), *Iron and Social Change in Early India*, New Delhi: Oxford University Press, 2006, pp. 51–52.
8 Habib, *The Indus Civilization*, p. 22.
9 Richard A. Gabriel, *The Great Armies of Antiquity*, Westport, CO and London: Praeger, 2002, p. 59.
10 Habib, *The Indus Civilization*, p. 24.
11 Jha, *Ancient India*, p. 34.
12 Ferrill, *The Origins of War*, pp. 28, 31.
13 Jean Deloche, *Studies on Fortification in India*, Pondicherry: Pondicherry Centre of the EFEO, 2007, pp. 4, 6.
14 Jha, *Ancient India*, p. 30.
15 Deloche, *Studies on Fortification in India*, p. 10.
16 G.N. Pant, *Indian Arms and Armour*, vol. 1, *Pre-and-Proto-Historic Weapons and Archery*, Chandigarh: Army Educational Stores, 1978, p. 35; G.N. Pant, 'The Saga of Indian Arms', *Journal of Indian History*, Golden Jubilee Volume (1973), p. 246.
17 Azar Gat, *War in Human Civilization*, Oxford: Oxford University Press, 2006, p. 18.
18 Pant, *Indian Arms and Armour*, vol. 1, pp. 36–37, 39–40; Pant, 'The Saga of Indian Arms', p. 246.
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2 Theory and practice of warfare in the Maurya and Gupta Empires

300 BCE–500 CE

The Persian and Macedonian invasions opened the subcontinent to the vagaries of outside military developments. Moreover, attendant social and political changes in South Asia gave birth to large political entities which could be termed as empires. The empires had at their disposal greater manpower and economic resources as well as bureaucratic assets for initiating transformations in matters military. Moreover, empires had bigger political ambitions. Further, continuous interchange of ideas between Greece, West Asia and India resulted in the emergence of hybrid military establishments in Eurasia. The net result was that substantial changes occurred in the theory and praxis of warfare in India.

The rise and fall of the Maurya Empire

When Alexander left North-West India, the dominant power in the subcontinent was the Nanda Empire centred round the Ganga Valley. The Nanda Dynasty was of Sudra origin. The empire was founded by Ugrasena Nanda. He started his career as a robber baron along the North-West Frontier of India. Gradually, he became bolder and started raiding the kingdoms. Through treachery he killed Kakavarni Sisunaga, the King of Magadha and became the ruler. Ugrasena's empire extended up to the eastern border of Punjab.[1] The Nanda Empire lasted for about 100 years and it was succeeded by the Maurya Empire.

Chandragupta Maurya (the Greek authors called him Androcottos/Sandrocottos), like Ugrasena, started his political career from the North-West Frontier of India. Chandragupta Maurya was of Kshatriya origin of the Maurya clan and was born in Pataliputra. When he was aged seven or eight, Chanakya/Kautilya from Taxila became his mentor. In Taxila, there was a military academy where boys entered at the age of eight and graduated at the age of 16. More than 500 students (including about 100 royal princes) were inducted annually into the academy. When a student graduated from the academy, he received a sword, bow, arrow, a coat of mail and a diamond. Probably, Chandragupta Maurya was inducted into this academy by Brahmin Kautilya (also known as Chanakya).[2] Chandragupta Maurya, with the aid of

Chanakya, made an alliance with the King of Simhapura in Rajputana and Gajapati King of Kalinga (Orissa). Together, they were able to overthrow the Nanda Empire.[3] When Chandragupta Maurya attacked the Nanda Empire, the ruler was Dhana Nanda. The core of Chandragupta Maurya's force was recruited from Punjab. We could speculate that they had some knowledge of Greek warfare, and the art of war was most developed in Punjab due to Persian and later Greek influences. Some of the warrior communities of Punjab and Afghanistan who provided recruits were as follows: Kshudrakas/Oxydrakai, Malavas/Malloi, Vrikas (Sakas from Behistan), Damani, Parsu (Persians), Urasas from Hazara, Prakanva from Ferghana, etc. In addition, warrior communities like Yaudheyas from Alwar in Rajasthan also joined his force. Chandragupta, like Ugrasena, also recruited several robbers in his force. In addition, rootless free-floating mercenaries were a welcome addition to his force.[4] Operation of a dynamic military labour market in Punjab and the North-West Frontier of India enabled the emergence of politically ambitious military adventurers like Urgrasena and Chandragupta Muarya.

Political developments in the region west of India aided the rise of Maurya power. On 11 June 323 BCE Alexander died. At that time, his empire stretched from the Danube to the Indus including some 5 million square kilometres (roughly 2 million square miles). The ensuing civil war among Alexander's generals known as the War of Diadochi sucked in the Greek commanders of North-West India. This in turn weakened Greek authority in the region around the Indus and Punjab, which in turn facilitated Chandragupta's rise. The Greek *satraps* of Carmania, Arachosia, Aria and Drangiana, along with Eudamus from North-West India, established an anti-Antigonus Coalition. In 316 BCE, both Eudamus and Pithon were fighting the civil war in Persia. And that allowed Chandragupta a free field in North-West India. Probably, Chandragupta Maurya at a young age had served in Alexander's army in Punjab during 326–325 BCE for a short time and thus was aware of the Greek techniques of warfare. This factor, along with the skilled recruits from Punjab, enabled him not only to defeat his indigenous opponents within the subcontinent but also the Greek invasion of Seleucus. By 320 BCE, the Indian *satrapies* had become independent. And, around 317 BCE, Chandragupta Maurya then aged under 30 had occupied the Indian *satrapies*. At that time, Chandragupta Maurya controlled an empire which stretched from the Bay of Bengal to the Khyber Pass.[5]

Nine Maurya Emperors ruled for about 133 years. The military effectiveness of the Maurya Empire was mind-boggling because it was able to defeat the then contemporary superpower – the Seleucid Empire. Seleucus (b. in 358 BCE, son of Antiochus who was an officer in Philip of Macedon's Army) commanded the elite footguards regiment (Hypaspsists) some 3,000 strong under Alexander for seven years. Seleucus *Nicator* (the Victor), one of the successful generals of Alexander who had carved out a principality east of Syria, invaded India in order to recover Alexander's lost provinces. However, instead of meeting only a regional king he met the combined strength of a

pan-Indian power. In a battle fought around 304 BCE, Seleucus was worsted. Seleucus made a peace settlement after giving up the *satrapies* of Paropanisadai, Aria (Herat), Arachosia, Gandhara and Gedrosia (Baluchistan). In return, Chandragupta Maurya presented him with a gift of 500 elephants. The negotiations were loaded in favour of the Maurya monarch as the Mauryas had access to a large number of elephants. Chandragupta had some 9,000 elephants. In contrast, Seleucus had to lose four provinces. In order to maintain amity between the two empires, a Greek Ambassador named Megasthenes came to Pataliputra in around 303 BCE.[6] Let us have a look at the Maurya military theory and organization.

Besides Greek accounts, from the Indian side, our main sources for the Maurya period are the epigraphic ones (Asoka's iron pillars, coins) and the literary masterpiece of Kautilya, *Arthasastra*. The *nitisastras*, though primarily concerned with statecraft, also discuss military affairs as part of state policy. The *nitisastra* literature originated sometime before 600 BCE.[7] The most famous *nitisastra* work was Kautilya's *Arthasastra*. The debate about its origin and authorship still continues among scholars. While some argue that *Arthasastra* is the product of several sages, others conclude that it is the end result of timeless principles distilled by India's master strategist Kautilya. R. K. Mookerji asserts that Kautilya's *Arthasastra* represents early Maurya India.[8] P.C. Chakravarti denies that the *Arthasastra* represents early Maurya Empire or the book is the product of a single *pundit* named Kautilya.[9] In contrast, Romila Thapar claims that *Arthasastra* was composed by Chandragupta Muarya's principal minister and mentor Kautilya/Chanakya. Later authors edited this text and, by the third or fourth century CE, the final text was edited by Vishnugupta.[10] Modern scholarship accepts that there are several layers in *Arthasastra*. However, we could safely assume that the core of *Arathasastra* was composed around circa 300 BCE, i.e. at the height of Maurya power. Kautilya's *Arthasastra* comprises 15 books (*adhikarnas*). Of them, five deal with internal affairs, eight deal with foreign policy and two with actual warfare.[11] Kautilya's *Arthasastra* could be categorized as the Handbook of the Maurya Empire.

For the authors of *nitisastras*, war is the continuation of politics by other means.[12] It seems that the idea about the interrelationship between politics and warfare, and primacy of the former, was in vogue in the Mauryan age long before the birth of Carl Von Clausewitz in eighteenth-century Prussia. R. P. Kangle writes that, while *dharmasastra* literature focuses on religious principles, *Arthasastra* is realistic and worldly wise. *Dharmasastras* emphasize the ideal but the *Arthasastra* deals with actual reality.[13] Kautilya, like Plato and Aristotle but in contrast to the *Bhagavad Gita*, believed that war should always remain instrumental and not an end in itself.[14]

The primary component of *rajadharma* (duty of the king), according to Kautilya, is conquest. So the Kautilya *Arthasastra* is a highly militaristic text which embodies the ethos of the context in which it emerged. The *Arthasastra* notes that the duty of the *vijigisu* (would-be conqueror: in our context

meaning Chandragupta Maurya and his grandson Asoka) is to unite the subcontinent from the Himalayas to Cape Comorin. Conquest is to be achieved either by pursuing *kutayuddha* or *dharmayuddha* (which involves use of conventional force).[15] Chakravarti goes on to assert that Kautilya's *Arthasastra*, like Machiavelli's *Prince*, pushes the view that the end justifies the means. In fact, the *Arthasastra* introduces the techniques of *kutayuddha* like the use of wine, women, poison, spies, trickery, ruse, etc., to get rid of enemies.[16] One of the crucial components of *kutayuddha* is *bheda* (divide and rule). It is to be noted that King Ajatasatru of Magadha was able to overthrow the Vajjis/Vrijis by following the policy of *bheda* (dissensions) which was implemented by his minister Vassakara.[17] Roger Boesche asserts that both Kautilya and Chandragupta actually followed *kutayuddha*. They together assassinated two Greek leaders: Nicanor and Philip.[18]

As regards battle, Kautilya's *Arthasastra* emphasizes the requirements of keeping a reserve force.[19] Kautilya notes the linkages between terrain, tactics and the various arms of the army.[20] The *Arthasastra* notes that supplies could be drawn from three sources: the home front, allies and the forests.[21] As regards combat motivation, the *Arthasastra* emphasizes the importance of leadership and morale. Before the beginning of the battle, the commander, or the king, emphasizes Kautilya, should motivate the soldiers to fight and die by giving a rousing speech about the importance of the just cause for which they would be fighting. The *purohits* (Brahmin priests) in the employ of the *rashtra* (state) through various *yagnas* and rituals should strengthen the morale of the soldiers. Here, Kautilya is for using religion in a purely instrumental sense. During a conventional campaign against the enemy realm, the objective is to be the enemy's capital. The fortified hostile capital is to be captured either by siege operations or, better, notes Kautilya, through subterfuge.[22]

To an extent, the Indian art of war influenced the Greek art of warfare. Each Maurya war elephant carried four personnel: one *mahout* and three soldiers equipped with bows and arrows.[23] The use of elephants which is emphasized by Kautilya became common in the regions west of the Indus. Seleucus used the elephants gifted to him by Chandragupta Maurya against his Greek opponents in West Asia. This was a case of an MTR initiated by Seleucus in the War of Diadochi. Each Seleucid elephant carried four archers on its back. And the elephants were protected during battle by light infantry.[24] In response, his opponents also started using elephants. At the Battle of Gabene (October 317 BCE), both Antigonus and Eumenes deployed elephants. Eumenes had 60 elephants to Antigonus's 30 such beasts.[25] In May 317 BCE, Antigonus advanced against Eumenes with 28,000 heavy infantry, 10,000 light infantry, 10,000 cavalry and 65 elephants. At the Battle of Gaza (312 BCE), Demetrius (son of Antigonus) deployed elephants against Ptolemy and Seleucus. The latter two had no elephants but used spiked caltrops and light infantry to counter Demetrius's elephants.[26] However, this MTR withered away with the collapse of the Hellenic regimes in general and the Seleucid Empire in particular. The Seleucids in Asia failed to integrate the elephant-centric

MTR with the social and economic fabric of their empire. For instance, rural military settlements of Iranian/Persian cavalry existed in western Media. Again, veteran Greek infantry soldiers were granted lands and some of their settlements became cities.[27] There was no such policy vis-à-vis the elephant warriors in the Seleucid Army, who were always treated as exotics or foreign elements or extras. Another reason for the collapse of the elephant-centric MTR in West Asia was the rise of the Roman Empire which mainly relied on heavy infantry organized in more flexible maniples and cohorts compared to the phalanx.

Kautilya mentions the following source of recruits for the army: individual robbers, outlaws, gangs of brigands, non-Aryan Indian tribes like the Kiratas, people from the forest regions and specialized warrior clans which abounded in Punjab. The cavalry troopers were recruited from the Greek settlers left in Punjab and Afghanistan, Kambojas from Gandhara, Persians and men from Vahlika/Bactria in Central Asia (probably Sakas).[28] The principal manpower source of the Seleucid Army was the Greek military settlements in West Asia. They were supplemented by troops brought by the allies and mercenaries.[29] A crude hierarchical command structure of the Maurya Army is evident from *Arthasastra*. The *nayaka* was in charge of ten *senapatis* (generals). Below the *senapati* came the *padika*.[30] The Maurya horseman was equipped with two javelins. And the infantry was armed with a straight broadsword and also simple wooden bows and arrows.[31]

Ancient Indian armies were indeed massive. The Nandas maintained 200,000 infantry, 20,000 cavalry, 2,000 four horse chariots and 3,000 elephants.[32] Further, east of Nanda Empire was the Kingdom of Gangaridae located at the mouth of the Ganga river (present-day Bangladesh) which had 4,000 war elephants.[33] It is to be noted that the forests of Bengal and Assam were great providers of elephants. The Andhras had 30 fortified cities, 100,000 infantry, 2,000 cavalry and 1,000 elephants. Chariots had proved useless against the disciplined heavy Greek infantry. The Mauryas abolished the chariot arm. But, the powers far down in South India who had no encounter with the Greek military system retained the chariot arm. It is to be noted that, both at Ipsus (301 BCE) and Magnesia (190 BCE), the Seleucids used chariots. This was, again, an example of 'the dead hand of tradition' shaping the force structure of a power. The Mabar region was full of elephants. India in general and South India in particular was a bad region for breeding horses.[34] This explains the cavalry-scarce, elephant-centric force structure of the South Indian powers. The army of Chandragupta Maurya numbered 600,000 infantry, 30,000 cavalry and 9,000 elephants.[35] The population of the Maurya Empire was about 50 million.[36]

As a point of comparison of the army size of post-Alexander Greek polities, around 319 BCE, Antigonus the 'one-eyed' commanded 60,000 infantry, 10,000 cavalry and 30 elephants.[37] In 316 BCE, Antigonus's standing army was comprised of 40,000 infantry and 5,000 cavalry. Its annual maintenance cost came to about 2,500 talents.[38] After the death of Antigonus, the two big

powers to emerge from the ruins of Alexander's empire were Ptolemy *Soter* (the Saviour) in North Africa and Seleucus *Nicator* in West Asia. Ptolemy's empire included Egypt, Libya, Syria and Palestine. And Seleucus controlled the region from Asia Minor in the west till Bactria in the east. Ptolemy, one of Alexander's ex-generals turned independent ruler of Egypt, in around 313 BCE had about 18,000 infantry and 4,000 cavalry.[39] During the Battle of Magnesia (190 BCE), the Seleucid Army was comprised of 60,000 infantry (light infantry which functioned as skirmishers, semi-heavy and heavy/phalangite infantry) and 12,000 cavalry. It was opposed by a 30,000-strong Roman Army. B. Bar-Kochva estimates that the Seleucid Army comprised on average 44,000 heavy infantry, 3,000 semi-heavy infantry, 8,000 to 8,500 cavalry and between 10,000 and 16,000 mercenaries. During emergencies, further troops were raised from the allies and the vassals. Antiochus III during his eastern expedition against Media, Hyrcania, Bactria and North-West India mobilized 100,000 infantry and 20,000 cavalry. Out of them, he detached 10,000 infantry and 2,000 cavalry against Bactria. In 165 BCE, at the Battle of Ammaus, the Seleucids had 40,000 infantry, 7,000 cavalry and 20,000 Philistine and Edomaean auxiliaries. In 129 BCE, Antiochus VII Sidetes during his eastern expedition against the Parthians mobilized 80,000 soldiers.[40] Further west, in 295 BCE, Rome's field army was comprised of six legions (6,000 soldiers). At that time, the population of the relatively small city state of Rome was 144,000. Almost 25 per cent of Rome's adult males at that time served in the field army. In 225 BCE, the Roman legionaries were comprised of 17 per cent of all adult male citizens. In 213 BCE, at the height of the Roman Republic's war with Hannibal of Carthage, the figure rose to 29 per cent.[41] During the second and first centuries BCE, the Roman Army derived most of its manpower not from Rome but from the other areas within Italy which had been subjugated by the Roman city state. And the inhabitants of these regions had been granted Roman citizenship. In 31 BCE, Augustus had 200,000 Italians under arms. In 400 CE, the combined strength of the armies under Eastern and Western Roman empires came to about 645,000.[42]

After the Spartan Army, the army under the Roman Republic was probably most professional in the ancient world. In the Roman Army, an able and courageous soldier was promoted to the rank of centurion after 15 to 20 years of service. The centurion's pay was 15 times higher than the pay of an ordinary soldier.[43] Megasthenes tells us that the military personnel of Maurya Army were professionals and not part-time soldiers. They were paid directly by the crown. Much emphasis was put on training the soldiers with their mounts. The horsemen were taught to control their mounts with bits and bridles. Professional trainers trained the cavalrymen first to move their mounts at a regular pace in a straight direction and then to gallop in a circle within the ring. The army had a proper logistical infrastructure. Strabo says that a separate commissariat branch existed. Bullock carts were used for transporting engines of war, food for the soldiers, forage for the cattle and horses. Foragers and grooms were maintained for the horses. There were royal

stables for the horses (the Seleucids had royal stud farms at Apama/Pella) and the elephants, and royal magazines for storing the arms. Veterinary surgeons were maintained for treating the diseased and wounded animals. The state even supplied courtesans for the military personnel.[44]

A bureaucratic state structure evolved which in turn sustained the huge Maurya military establishment. The capital of the Maurya Empire was Pataliputra on the Ganga.[45] The empire was divided into several provinces and each province was under a *rastriya* (governor). Girnar, Taxila, Ujjain, Tosali and Suvarnagiri were the provincial capitals. Taxila was the headquarter of the province which included Punjab, Sind and the region east of the Indus. Suvarnagiri was the headquarter of the province south of the River Narmada. Tosali was the capital of the province which included Bengal and Kalinga. And Ujjain was the capital of the province which encompassed Malwa, Gujarat and Kathiwar.[46] The royal princes along with local chieftains were appointed as provincial governors. The language of the elite was Sanskrit and the common people spoke Prakrit. For military reasons and also for encouragement of trade and commerce, the Maurya Empire paid special attention to road building and maintenance of the highways. The royal road ran from Pataliputra to the Indus.[47]

The principal income of the state remained land revenue. In the land owned by the ruler, the cultivators were paid one-fourth of the produce and also in the land belonging to the peasants the latter paid 25 per cent of the produce as tax to the state. In general, the impact of warfare on society was limited. The armies did not unnecessarily destroy the cultivators and cultivation. However, Asoka changed the rules of warfare. After annexing Kalinga (Orissa), he deported 150,000 persons as prisoners. R. Thapar opines that some of them were cultivators who were used to clear the virgin land and also wasteland for expanding the area under cultivation. At times, the state encouraged people from the overpopulated regions and also coerced the Sudras to move into the wasteland and forest in order to clear the region and extend the area of cultivation which in the long run raised the state's revenue. The Maurya state took care to disarm the peasants to prevent armed insurgency. The state discouraged the maintenance of horses and elephants (which were actually war engines) by private persons. The basic unit of the rural society was the village. And each village comprised 100 to 500 families. Agricultural prosperity gave birth to a class of village entrepreneurs known as *gahapatis*. They provided capital to the peasants and they themselves also owned large tracts of land which was cultivated with the aid of hired labourers. Mining was also an important aspect of the Maurya economy. For instance, the Zawar Mine in Aravalli in the Udaipur District of Rajputana was used for extracting silver and lead. Some of the shafts in the mines with timber supports for the galleries reached up to a depth of 100 metres. Certain groups of artisans who dealt with the manufacture of weapons were exempted from taxes and employed directly by the Maurya state. They were paid directly from the royal exchequer. Other groups of artisans during

emergencies had to work in the state armouries for certain days every year. It was a sort of service tax.[48]

The *Arthasastra* warns that it is undesirable, unjust and impracticable for a *vijigishu* to expand the empire beyond the subcontinent.[49] Asoka after the conquest of Kalinga did not expand the empire further because there was no revenue to be gained from the forested regions in East Bengal and Assam. Nor was there any attraction in conquering Peninsular India which was covered with tribal republics. In the north, there are the Himalayas. So, the Maurya Empire had reached its logical culmination. Asoka then reduced military expenditure. Lack of any further campaigns resulted in the Maurya Army being neglected and becoming militarily incompetent under his weak successors. Further, to prevent the professional military men from challenging the rule of the dynasty, Asoka reduced the power of the military officers by legitimizing his rule through the introduction of non-violent *dhamma* (Buddhist religion). Thapar writes that to bind the multi-cultural society, the policy of *dhamma* with its emphasis on social responsibility was propagated by Asoka. In order to spread his message, Asoka constructed pillars even at the outposts of his empire. An inscription written in Aramic was found in Lamaghan/Lamghan on the northern bank of the Kabul river near Jalalabad. A copper plate inscription in Gorakhpur District of Uttar Pradesh and the Mahasthan inscription at Bogra District in Brahmi script propagate the social welfare aspect of the Maurya Empire.[50] The net result was that *dhammaghosa* replaced *bherighosa* (Buddhism spread to replace war) and the Maurya Army was incapable of resisting the next round of invaders.

After Seleucus, Antiochus III of Syria turned his attention towards the eastern part of his empire. He tried to invade Bactria (Balkh) which had become independent of the Seleucid Empire. Antiochus III failed in his task and made peace with the Greek ruler of Bactria known as Diodotus. Antiochus III then crossed the Hindu Kush and invaded India in about 206 BCE. From Subhagsena (ruler of the western part of the Maurya Empire), Antiochus took 150 elephants but gave nothing in return. This means that, unlike the time of Seleucus, the military balance had turned in favour of Antiochus vis-à-vis the Mauryas. The Syrian monarch then moved towards Kashmir.[51]

The Maurya Dynasty was succeeded by the Sungas, a Brahmin family from Ujjain. Pushyamitra Sunga, a Maurya general, executed the last Maurya Emperor Brihadratha and ascended the throne. This was a rare case of a military coup in the history of India. Vidisha in Madhya Pradesh was the centre of the Sunga Kingdom. The Sunga coup to an extent was a reaction against the excessive favours shown to Buddhism by Asoka. Pushyamitra, an advocate of rabid Brahmanism, persecuted the Buddhists. Thus, political changes and shifts in religious policy weakened the hold of the pan-Indian polity, especially when the subcontinent was threatened by a series of external invaders. The Sungas had to fight against both internal and external enemies like the Vidarbha Kingdom of Berar in northern Deccan and the Bactrian-Greeks who evacuated Bactria due to pressure from the Central Eurasian

steppe nomads and moved into Punjab. The Bactrian Greeks settled in Punjab and were known as Indo-Greeks. The Sungas controlled the Gangetic Valley, and the southern boundary of the kingdom was Narmada. The Sunga Kingdom controlled important towns like Pataliputra (in Bihar), Ayodhya (in Uttar Pradesh), Vidisha, Jalandhar and Sakala (Sialkot). However, due to pressure from the external foes, the Sunga Kingdom contracted to the region of Magadha and the dynasty was replaced by the Brahmin Kanvas in 28 BCE.[52]

The Indo-Greeks and the other regional powers to a great extent were responsible for the weakening of the Sunga-Kanva power. Kalinga became independent under Kharavela. His army was comprised of infantry, cavalry and elephants. Kharavela fought with the Satavahanas, a power which was emerging in the Deccan. Kharavela also launched raids into Magadha and clashed with Demetrius, the Indo-Greek ruler of Mathura.[53]

In the early second century BCE, Demetrius, son of Euthedemus, pressed farther into India. His successor King Menander during a raid reached Pataliputra. Menander ruled from 155 to 130 BCE. His empire extended from Kabul in the west to Mathura in the east. He exercised control over the Swat District and the Hazara Valley. Menander was a patron of Buddhism.[54] Patanjali's work, composed around the second century BCE, gives the impression that the Indo-Greeks were dominant in Rajasthan and in the western part of the Gangetic Valley.[55]

The Indo-Greeks were swept away by several waves of invasions of the steppe nomads. The Scythians (Sakas/Sacas) under Maues (Moga) around 80 BCE destroyed the Indo-Greeks and captured Mathura. The most important Saka ruler was Rudradaman who controlled Sind, Kutch, Gujarat, Rajasthan, Konkan, Narmada Valley, Malwa, Kathiwar and western Deccan. The last Indo-Greek King Hippostratos was defeated by the Saka ruler Azes in around 58 BCE. The Sakas were in turn pushed out of North-West India by the Parthians (known as Pahlavas). Those Parthians who settled in India were known as Indo-Parthians. The most important Indo-Parthian rulers were Mithridates II (not to be confused with Mithridates of Pontus) and Gondopharnes who ruled in the first century CE. However, the bulk of the Parthians moved west and conquered Persia.[56] The Parthians proved to be a thorn for the Roman power also. At Carrhae (53 BCE), a Roman Army was annihilated by the Parthians. The Romans were neither able to conquer Mesopotamia nor were able to destroy the Parthian polity in Persia. The Roman tactical system, based on heavy infantry, had no answer to the mounted archery of the Parthians especially in the wide plains of West Asia. The Parthians in Persia were destroyed in 224 CE by the Sassanids.[57] The Indo-Parthian power was broken by the advance of another nomadic group known as Yueh-Chi during the second century CE. An indigenous trans-regional dynasty emerged in North India only in the third century CE with the coming of the Guptas.

Now let us analyse the nature of warfare in South India, which presents similarities as well as dissimilarities with the Aryan-dominated North India. In the absence of historical accounts, we have to depend on poetry. The

Purananuru is an anthology of 400 poems written between the first and third centuries CE by more than 150 poets including at least 10 poetesses. The poems depict the political and social scenario of South India roughly between 300 BCE and 250 CE. The language of the poems is old Tamil. The poems do not accept the Brahmanical *karma* theory. The collection of poems considers existence as an unsolved puzzle. For the poems, the physical world is categorized as exterior and they deal with this aspect of human existence. The poems deal with kings' war and peace, ethics of warfare and nature of political rule. In fact, most of the poems are addressed to the rulers. Most of the poems deal with the Chola, the Chera and the Pandya kings and several small chieftains. The poems describe the Tamil land (present-day Tamil Nadu) as a region of incessant warfare. Somewhat like the *Bhagavad Gita*, the *Purunanuru* says that the warriors are supposed to fight regardless of the danger of death. Martial courage (*maram*) of the warriors is emphasized in the poems. The poems describe an ideal Tamil king as one whose rule is just and generous, and in war he has to be brave. In fact, it is the duty of the king to be brave and ferocious in warfare.[58] The king kills in battle and drinks toddy spirit. Heavy drinking after battle was also a characteristic feature of the Macedonian kings. It is enshrined, says *Purananuru*, that killing done in battle under the orders of the king is just and legitimate and is not murder.[59] This line of reasoning is similar to the picture of a just king as present in the Classical Sanskrit literature describing Vedic Aryan North India.

The *Purananuru* notes that a battle or a campaign started with the beating of the royal drum. It was made of wood taken from a tree grown from the defeated enemy kingdom. And the skin of the drum was taken from a bull which had defeated another bull in a bull fight. This was a typical non-Aryan custom of South India. However, the ancient Tamils absorbed the Aryan caste system slowly. The profession of several low castes like the Kinaiyans and the Tutians was to serve as drummers. They played the drums during the battle in order to rouse the spirit of the soldiers. The bards (the early medieval Rajput society also had them) were from the Panan community, who were also a low caste.[60] Some of the poems describe the force structure of the South Indian kings. Warriors wearing plumes and mounted on horses was a combat technique which spread from North India.[61] However, the core of the South Indian armies remained elephants. One poem describes:

> ... in your strong hand a bright sword
> . ...
> ... as you ride the huge neck of your elephant
> Too fierce to approach, who batters the gates
> Of enemy walls with weapons of his tusks, who had a massive trunk.[62]

It is to be noted that elephants were used not only in field battles but also in sieges to destroy the wooden and earthen fortifications of the enemy. Later, this practice also spread into North India. The Indo-Greeks introduced the

Indrakosa technique of fortifications. They were posts built within the walls of the fort for shooting arrows by the garrison against the besieging army.[63] This new piece of fortification engineering was somewhat geared to counter the use of war elephants as a battering ram. So, a particular MTR (i.e. use of elephants as battering rams in sieges) gave rise to a counter-MTR (use of advanced fortification techniques). And this challenge-response dynamic continued. This challenge-response dynamic was not unique to Western Warfare as Geoffrey Parker would make us believe.

The Guptas and the mounted nomads

After the collapse of the Mauryas, the next important Indian power to rise in the subcontinent was the Guptas. The founder of the Gupta line was Sri Gupta (circa 240–80 CE). He was succeeded by Ghatotkacha (280–319 CE). Under him, the Guptas were a minor power in North India. Ghatotkacha was succeeded by Chadragupta I (r. 319–35 CE). Under him, the Guptas became one of the rising powers of North India. His son and successor Samudragupta (335–80 CE) made the Guptas the dominant power in North and Central India.[64]

One of the inscriptions tells us that Samudragupta defeated and killed nine kings of North India. One of the kings was Rudrasena Vakataka who was defeated and killed in Eran (in Malwa) in 348–49 CE. Samudragupta destroyed the power of the Naga Republic by slaying King Ganapati and Nagasena of Mathura. After his northern campaign, Samudragupta started his southern campaign, which resulted in the defeat of 12 rulers. Samudragupta passed through Chota Nagpur and defeated King Mahendra of South Kosala in the Mahandi Valley. Kosala included the districts of Raipur, Bilaspur and Sambalpur. Then, he crossed the forest of Orissa and Madhya Pradesh. Samudragupta directed his attention towards Kanchi (the Pallava capital) and Vengi (the region between the Rivers Krishna and Godavari). The Licchavi Prince Jayadeva I of Nepal acknowledged Samudragupta's suzerainty.[65]

While Samudragupta annexed the territories of the defeated rulers of North India, he established indirect rule in South India by allowing the defeated rulers who accepted overlordship of the Guptas to retain their kingdoms. This was probably because Samudragupta realized that direct administration of territories in North India from his capital Pataliputra was possible, but distance and terrain prevented establishment of direct rule from Bihar to the distant south. Even the Delhi Sultanate during the fourteenth and fifteenth century failed to establish direct control from Delhi over the tip of the southern peninsula. Only the British with the aid of communications technology and steam boats were able to establish a centralized bureaucratic pan-Indian empire. The western boundary of the Gupta Empire under Samudragupta touched the bank of the Chenab river in Punjab.[66] However, the Sakas/Scythians of western India remained independent in Samudragupta's reign.

The Gupta Empire reached its zenith under Samudragupta's son, Chadragupta II Vikramaditya (r. 375–414 CE). The *Devichandraguptam* of

Vishakadatta tells us that Samudragupta was succeeded by Ramagupta. Ramagupta's camp was surrounded by the Sakas in a pass in Malwa. The Saka ruler demanded the surrender of Ramagupta's Queen Dhruvadevi. Ramagupta's younger brother Prince Chandragupta II launched a commando attack and killed the Saka ruler. As the Sakas were dismayed by the sudden death of their ruler, the Gupta force broke through the Saka troops. After this event, Ramagupta's prestige nosedived. He was eliminated and his brother Chandragupta II took the title of Vikramaditya and ascended the throne. Further, Chandragupta II married Dhruvadevi.[67] Chandragupta II destroyed the Saka-Kushana power in Mathura region of North India.

After Chandragupta II came Kumaragupta I (r. 414–55 CE). In his reign, the southern boundary of the Gupta Empire touched the Vindhya Mountain. Beyond it was the Vakataka Kingdom, the strongest power in western Deccan. The Vakataka realm comprised the Konkan region, western Malwa and Andhra country.[68] Overall, the Gupta Empire was smaller than the Maurya Empire as the former's firm control extended only within North and Central India.

Bimal Kanti Majumdar asserts that the Gupta military organization was inferior to that of the Mauryas.[69] This is just not correct because the Guptas were able to check a far more dangerous threat than the Seleucid Empire: the Sakas and the Huns. And the Guptas unlike the Mauryas innovated in matters military. The Guptas, by absorbing elements from the steppe nomadic and Greek invaders, initiated an RMA centred on archers mounted on heavy cavalry and also sword-equipped heavy cavalry. The core of the Gupta Army was comprised of heavy cavalry supported by the traditional branch: elephants supplemented with light infantry. While one group of heavy cavalry with mounted archers conducted long-distance shooting which softened the enemy, the other contingent of heavy cavalry equipped with swords charged the disorganized enemy and engaged in close-quarter combat.

Chandragupta II undertook an expedition across Vahlike (Balkh?). R.K. Mookerji asserts that Chandragupta II crossed the Sindhu (Indus) and its tributary rivers (the Jhelum, Chenab, Ravi, Beas and Sutlej rivers). This expedition was directed probably against the Huns or the Sassanids. Another objective of this campaign was to get access to the Central Asian and Afghanistan horses. From numismatic evidence, we get some glimpse of the Gupta military innovations. The Archer-type coins issued by the Gupta emperors show that the ruler is standing with bow in the left hand and arrow in the right hand. The bows look like double-curved bows used by the mounted nomads.[70] The Horseman-type coins were introduced by Chadragupta II. On the obverse of these coins, the king is shown riding a caparisoned horse and sometimes armed with bow, arrow and a sword.[71] The Tiger-type coins issued by Samudragupta show the Gupta ruler holding a double-curved bow in his hand and shooting a tiger.[72] The numismatic representation showed that the Guptas used composite bows. Probably the Guptas borrowed the use of such bows from the Scythians, Parthians or the Sassanids. Some gold coins bearing the legend Sri Prakasaditya issued by Gupta Emperor Skandagupta depict

the ruler on horseback equipped with a sword.[73] It is an open question whether the Guptas also had compound bows or not. According to P.K. Gode, the Scythians used compound bows. While the compound bow was made of two pieces of the same material joined together, the composite bow was constructed with a combination of different materials. The composite bow was made of horn, wood and sinew and its maximum range was 1,000 yards.[74]

Kalidasa's/Kalidas's *Raghuvamsam* offers us some glimpse of the Gupta Army in action. Kalidas was a poet of either the fourth or fifth century CE. Probably, he was a courtier of the Gupta Emperor Chandragupta Vikramaditya.[75] In *Raghuvamsam*, Kalidas's hero Raghu was probably Chandragupta Vikramaditya. Kalidas tells us that the Gupta Army was capable of conducting warfare both in the arid regions of North-West India and in the swampy riverine forested tracts of Bengal and Orissa. Raghu's campaigns against Bengal and Orissa depended on the use of a riverine navy supported by elephants. The latter were also used for crossing the rivers. Against the *Yavanas* of the West (probably Huns), Raghu used mounted archers.[76] One passage of *Raghuvamsam* states:

> Raghu's force clashed with the horse warriors of the Western Yavanas. Both sides used mounted archery so much so the sky got darkened and the opposing soldiers could not see each other. Only the sound of bowstrings due to arrows shot by the soldiers on both sides were audible.[77]

The innovations of the Gupta Army were due to interactions with the non-Indian powers. Now, let us turn the limelight on these invaders. Learned men of the ancient and medieval eras from both the eastern and western parts of Eurasia accepted that the mounted nomads from the cold frontier regions were better warriors than the people from warmer sedentary regions. The Greek polymath Aristotle posed the question why people from the warmer regions are cowardly while people from the cold frontier regions are 'noble savages'? After him Ptolemy noted the warlike instinct of the Scythians from the colder region. And the Persian historian Juvaini writing in the mid-thirteenth century when the Mongol deluge was flowing over the Islamic lands, claimed that the army of the Tatars (Turks) were the best in the world.[78] They were all mounted nomads.

The term nomad comes from *nomas* meaning wandering shepherd. They generally followed the availability of water and grass. In the winter, they deserted the uplands for the lower level and in summer as the plains dried out they moved to upland pastures. So, their migrations were mostly determined by climatic conditions. Sheep provided them with wool used for the felt of tents, and the skin was used to make winter clothes. The nomads lived in yurts. The yurt was a cylindrical tent with a conical roof and lattice-work frame with roof made of willow or juniper lashed together with leather thongs. The layers of felt provide protection from cold and wind of the steppe. At the top of the roof is an open circular compression ring which holds the poles and

allows the smoke out of the tent. Mare's milk was used for making the favourite drink of the nomads known as *koumiss*. The milk of the ewe was converted into cheese and the sheep's flesh was eaten. And the droppings of the sheep were used as fuel. Oxen and cows were used as draught animals. The horse was used as a means of transport, an instrument of war and hunting, and a currency for trade. For instance, in return for horses (which the Chinese used as mounts in war), the nomads received silk, tea and grain.[79]

The Eurasian steppe land extends from the forests of Manchuria in the east up to Hungary in the west. This steppe land includes Kazakhstan, Ukraine and the Black Sea region. The Eurasian steppe region, also termed occasionally High Asia, has been the homeland of various types of nomadic groups throughout history. The Scythians were an Indo-Iranian group who were dominant till the first centuries CE. Eastern High Asia, that is Mongolia, is the homeland of the Turkic speaking people like the Mongols and the Manchus. The north-western parts of High Asia had been the original homeland of Uralo-Altaic peoples like the Finns and the Hungarians. The region's centre of gravity, writes Gerard Chaliand, lay between the Kerulen, Orkhon and Selenga rivers, north of modern Mongolia and south of Lake Baikal. This region was the original homeland of the Turkic-Mongols. The Tungus-Manchus lived farther east of them. In Mongolia, the temperature varies from +35 degrees centigrade to -40 degrees centigrade with frequent icy winds. The steppe grassland is bordered to the north by the Siberian forest and low marshy lands of western Siberia. In the south, the steppe ends at broken but very high mountainous ranges starting from the Caucasus to Altai, including the Hindu Kush and the Pamirs. In between the mountain ranges lie the deserts like Taklamakan and the Gobi. There are a few oases along the arid landscape like Ferghana, Tarim Basin, Yarkhand, Kashgar and Turfan. The last three are located along the Silk route from China.[80]

The mounted nomads coming from a deficit economic zone repeatedly attacked the sedentary, agriculture-based civilizations situated along the rim of Eurasia. During the fourth and third centuries BCE, China in the Warring States era faced raids by the Hsung/Hsiung-Nu (Turkic-Mongols).[81] The Hsiung-Nu Empire located around China's northern frontier came into existence around 209 BCE due to the great conquests of Mo-tun (supra-tribal leader) of the Hsiung-Nu tribe. This empire was contemporaneous with the establishment of the Han Dynasty in China. The Hsiung-Nu economy was dependent on trade, gifts and subsidies from China and taxes from the conquered areas, in addition to their own pastoral production. The empire collapsed in 57 BCE mainly due to a natural disaster which destroyed most of the Hsiung-Nu livestock and generated a political crisis.[82]

Towards the end of the first century CE, the Han Empire was able to defeat the Xiong-Nu Empire in Mongolia. This event started a chain reaction. The Huns started their westward trek and this pushed other nomadic groups in the Inner Asian Steppes towards the sedentary states along the rim land of Eurasia. C. Kelly asserts that the Huns were not Xiong-Nu but a separate

nomadic tribe which inhabited Kazakhstan. This is the region between Altai Mountain in the north-east and the Caspian Sea in the south-east. The dry steppe in this country covers 300,000 square miles. The low-rainfall, treeless grassland zone is punctuated with large areas of sand.[83]

Tribal groups on the western edge of the Hsiung-Nu Empire could become independent by moving beyond the *Shan-yu*'s sphere of control. When the Hsiung-Nu defeated the Yueh-Chi, the latter, rather than remaining as part of the expanding Hsiung-Nu Empire, moved west along the Oxus river beyond the reach of the Hsiung-Nu.[84] The Yueh-Chi functioned as long distance traders. They supplied the Chinese Empire with jade and horses in return for silk. Probably, the Yueh-Chi initiated the Silk route. The Yueh-Chi under pressure from the Xiong-Nu migrated from the Ili river to the Chu river region around 130 BCE. In 129 BCE, the Yueh-Chi conquered Bactria and drove away the Greeks settled in Bactria in a southward direction. As a result, the Bactrian Greeks entered Punjab.[85] Then, the Bactrian Greeks attacked the Sunga Empire which had succeeded the Maurya Empire. The Scythians who were settled in the region around Lake Issykkul and the River Jaxartes in Central Asia under pressure from the Yueh-Chi moved south. The Yueh-Chi split into two groups. The Little Yueh-Chi settled in northern Tibet and the Great Yueh-Chi moved towards the shores of Aral Sea, thus displacing the Scythians (Sakas) who moved into Bactria and Parthia.[86]

Around 50 BCE when the Kushana King Kujula Kadphises crossed the Hindu Kush Mountains, the Yueh-chis were transformed partly from long-distance horse-riding nomadic warriors-cum-traders to conquerors of sedentary societies. According to one Chinese official, the Kushanas could mobilize several hundred thousand horse archers wearing boots and trousers.[87] Samudragupta's coins show the Guptas wearing the peaked Kushana headdress and also close-fitting cap.[88] The Kushanas established an empire which included North-West India, and parts of North and Central India. They were known as the Imperial Kushanas. The Kushanas pushed the Sakas into Sind and the Kathiwar region, where they ruled till the fourth century CE until they were extirpated by the Guptas. The Kushanas in turn faced pressure from the Huns on their northern boundary and the Sassanids on their western boundary. In 226 CE, Ardashir established an indigenous Persian dynasty known as the Sassanid Dynasty on the ruins of the Parthians in Persia. Ardashir defeated the Kushanas and occupied Peshawar and Taxila.[89] The Sassanids proved tough opponents even to the Roman Empire. However, the Sassanids concentrated on regaining Mesopotamia from the Romans. Ironically, the collapse of the Kushan power in India due to Hunnic pressure created a power vacuum in North India which in turn enabled the Gupta Empire to rise and dominate North and Central India. However, in the long run, the Huns accelerated the demise of the Guptas.

The military superiority of the Eurasian steppe nomads was based on their horsemanship, weapons and the quality and quantity of their mounts. The Inner Asian nomads were famous for their skill in shooting backward, which

in history is known as the famous 'Parthian shots'. The nomads conducted a tactical retreat and then, while speeding away, turned their body and head and shot back arrows at their pursuing adversaries. The Parthian nomads wore breeches, high shoes and riding caftans with long sleeves. The Parthians and the Sarmatians used compound bows and the quivers were attached to their thighs. Assyrian and Phoenician art of the eighth and seventh centuries BCE represents the Parthian shots by the Scythians. Greek and Ionian art of the sixth century BCE also represented the Parthian shots. The Scythians (i.e. Sakas) wore a pointed cap or a helmet.[90] From the seventh century BCE till the middle of the third century CE, the Scythians occupied the steppes between the Don and the Danube rivers. To their east were the Sarmatians. Both these groups belonged to the Iranian/Persian linguistic cluster.[91] The coins issued by the Indo-Greeks, Scythians and Parthians portray the kings wearing chain-mail armour. The Scythians introduced heavy cavalry. The cavaliers were equipped with lances and were encased in armour.[92] And this MTR influenced the Gupta military organization.

Riding was introduced in North China from 'barbarian' neighbours around the fourth century BCE. Sun Tzu's (Sun Wu's) *The Art of War* has no reference to cavalry. However, Sun Pin's work (circa 350 BCE) contains a brief passage on the use of cavalry. The word *chi* (to ride astride) begins to appear with increasing frequency in texts which are datable to the third century BCE. In the Han Empire, not only riding became widespread but the polity also tried to acquire a large number of good mounts. Scholars still differ as to whether the bit with cheek bars appeared first in China in Shang times or first emerged in Inner Asia or West Asia.[93]

The Western Huns during their journey in the western direction encountered the Goths who inhabited the region between the rivers Don and Dniester (Ukraine and Rumania). The Goths who were running away out of fear of the Huns were able to defeat the Eastern Roman Empire at the Battle of Adrianople. Out of 30,000 Roman soldiers, some 20,000 were killed. The Huns were equipped with composite bows. Such a bow was about five-feet long, its wooden core backed by sinews and bellied with horn, while bone strips stiffened both the grip and extremities (ears) of the bow. While the back of the bow was resistant to stretch, the belly could be compressed. The manufacture of such a bow took about a year.[94]

The Inner Asian steppe nomads rode mounts which were long and thin, with muscular head and almost angular body. The nomads' mounts were famous for their endurance and speed. The small sturdy nomadic horses are acclimatized to the cold of winter in the steppes and could survive on grass alone if necessary.[95] Denis Sinor asserts that the earliest evidence of stirrups comes from Korea and Japan and they could be dated to the fourth and fifth century CE. He continues that there is no strong evidence that the Huns (370–450 CE) used stirrups but the Avars a century later used stirrups. From the Avars, the Byzantine armies learnt the use of stirrups. Maurice's *Strategikon* (630 CE) mentions the use of stirrups. And then the use of this device passed

from the Byzantines to the Arabs. Even in the early seventh century CE, stirrups were not used in Persia. The stirrups were in use in West Europe during the early eighth century CE. Sinor continues that the stirrups were not invented by the Altaic people.[96] But, D.N. Jha opines that the Huns in India used metal stirrups.[97] Horseshoes became common among the Inner Asian nomads with the Mongols. Before them, the nomadic mounts had hippo-sandals. They covered the hooves of the horses with perishable materials like leather, ropes and wood. But, iron horseshoes, claims Denis Sinor, were in use in fifth-century Europe.[98]

After the death of Skandagupta in 467 CE, the Gupta Empire faced the full weight of the attack by the Eastern Huns. The Huns spread as far as Madhya Pradesh. The most important Hun rulers in India were Mihirakula and Toramana, who ruled Punjab.[99] But, Hunnic power did not last long in India. The big question is, 'Why?'

Generally, each Hun or Mongol trooper went to the campaign with five to 18 horses. Rudi Paul Lindner writes that, due to ecological factors Attila had few cavalry. In fact, in 451 CE, Attila fought an infantry battle due to inadequate number of horsemen at his disposal. Mounted Huns were not present in adequate numbers west of the Carpathians. The Great Hungarian Plain with some 42,400 square kilometres of pasture is less than 4 per cent of pastures available in modern Mongolia. A horse living by grazing alone required 25 acres of pasture per year. At its maximum, the Hungarian plain could support 150,000 horses. So, at a maximum, Attila could maintain two *tumen* (20,000 troopers) for his European campaigns. In other words, the nomadic logistical base just did not exist for campaigning in Italy and Gaul with large number of horse archers. So, the ecological factors forced sedentarization of the Hunnic army in Europe.[100] And this in turn reduced the combat effectiveness of the Hunnic armies.

Peter Heather claims that the long-term indirect effects of Hunnic incursions in the western part of Eurasia had greater significance for the Roman world compared to the direct battlefield victories of the Huns over the Romans. Due to the incursions of the Huns into Russia and Europe, between 376 and 408 CE, large numbers of Germanic tribes were forced to move inside the Western Roman Empire, which in turn weakened it. The migration of new groups into the Roman Europe has been calculated as more than hundreds of thousands. The ratio of the migrants in relation to the original population of Roman Europe is calculated as 1:5. Attila and Bleda's invasion of Roman Europe across the Danube prevented transfer of Roman military assets to North Africa. And this enabled the Vandals to occupy North Africa in around 435 CE. In 453 CE after the death of Attila, as the Hunnic Empire collapsed, many of the tribes which were subordinated to it became independent and started attacking the Western Roman Empire. As the power of the Roman central government dissipated, the local landowners of the empire made their own arrangement for defence. This in turn further weakened the hold of the central government. The political accommodation between the incoming

Germanic tribes and the local landowners of the Roman Empire created a new political order on the ruins of the old Western Roman Empire in around the sixth century CE.[101]

Following Lindner, one could argue that the hot and humid climate of India along with the fertile river valleys producing bumper crops were not suitable for breeding a large amount of horses. Absence of pastures also prevented sustained campaigning in India for a long period. Hence, Mihirakula and Toramana could raid, pillage and plunder the South Asian principalities but could not establish a stable empire in South Asia unless they sedentarized themselves like the Turks from the twelfth century onwards who later established the Delhi Sultanate and the Mughal Empire. Mihirakula and Toramana's base was Punjab because the dry arid Salt Range in West Punjab, which is the projection of the Central Asian arid zone in the subcontinent, provided some pastures to their horses. However, as in Roman West Europe, the Hunnic invasions had long-term indirect effects which proved adverse for the Guptas. The Gupta Empire was less centralized and bureaucratic compared to the Mauryas. The administrative posts were hereditary, which reduced the leverage of the central government. Further, the Gupta practice of granting land in perpetuity to the priests, temples and royal officers with fiscal and administrative immunities further weakened the authority of the state. The recipients of the land grants had control over the salt, mines and the agricultural labourers. This undermined the authority and fiscal base of the state.[102] There were several republican principalities within the Gupta Empire and the former enjoyed autonomy as regards self-government.[103] The Gupta Empire comprised several lesser kings with considerable autonomy within their empires. The important feudatories of the Gupta Empire were the Maitrakas of Valabhi, Vardhanas of Thaneshwar, Maukharis of Kanauj and the Chandras of Bengal.[104] Once the Hunnic invasion had weakened the Gupta central authority, then these feudatories threw off the allegiance of the Guptas and established regional polities.

Conclusion

Both the Mauryas and the Guptas were able to defeat the powers south of the River Narmada. This was possible partly because South India was cut off from any foreign contact outside the subcontinent. So, South Indian military developments at least in the Maurya and Gupta periods was always one step behind the North Indian powers, which were in touch with the latest military developments in Eurasia due to continuous interactions with the Greeks and the steppe nomadic barbarians. The Mauryas were more powerful than the Guptas in terms of the extent of their empire. The Maurya success to a great extent was due to managerial innovations rather than any military technological innovations. The Maurya force quantitatively was bigger than that of Porus. The Mauryas eliminated the chariots. But, they did not come up with any new weapon systems. Rather, the Greeks started copying the Indian

practice of using war elephants in campaigns. The bureaucratic capacity of the Mauryas enabled them to raise a greater amount of economic, demographic and animal resources, which in turn were harnessed for the establishment of their pan-Indian empire. Connected with the managerial advancement, political ambitions of Chandragupta Maurya and his grandson Asoka were also responsible for expansion of Maurya power throughout the subcontinent. In comparison to the Mauryas, the Gupta administrative transformation was less striking. However, the Guptas were able to hold their own in North India due to the MTRs which they copied from the nomadic 'barbarians'. However, the Gupta RMA based on horse archers mounted on heavy cavalry fizzled out because they failed to integrate such radical military technical changes with the wider socio-political fabric of India. For instance the Guptas did not establish any linkages between horse archers and landed society of the subcontinent. Nor did mounted archery find a place in the writing of the Brahmin *acharyas* which could have legitimized the copying of foreign *mlechcha* military practice. So, once the Gupta Central Government weakened, the technique of horse archery among the Indians fizzled out. In addition, the adverse ecological conditions of North India also decelerated the maintenance of horse archers in the long run. Once, the weakening Gupta Empire lost control over Punjab and eastern Afghanistan, the flow of high quality horses, recruits and techniques of making specialized bows ceased. The end of the Gupta Empire during the mid-sixth century CE also saw the temporary ending of nomadic invasions through North-West India. And this allowed the Indian rulers to tinker with the military techniques and technologies available within the Indian subcontinent, which is the subject of our next chapter.

Notes

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3 Theory and practice of warfare from the post-Gupta era to the beginning of Islamic intrusion in South Asia

Circa 500–1000 CE

Historians generally consider the period after the collapse of the Gupta Empire as the beginning of a sort of Dark Age. The picture portrayed is that state structure dissolved and trade and commerce declined. The rise of Brahmanical power and landholding characterized the socio-economic landscape. And warfare mainly comprised a clash of rabbles raised by the weak states, hobbled by divisive sovereignty. This chapter has three sections. The first section shows the evolution of complex and sophisticated theories of warfare in the post-Gupta era. And the second section analyses warfare in practice. And finally the last section portrays the rise of Hindu warrior communities as a new social development in the early medieval era.

Theories and theorists of warfare

David A. Graff writes that, unlike West Europe and the Byzantine Empire, medieval Chinese society did not produce soldier-scholars like Caesar, Thucydides, etc., who were not only historians and theorists of warfare but also participated in organized violence. In medieval China, there was a strict difference between the men whose job was to command the armies and scholars who wrote official histories and also at times occupied high civilian posts in the government. The military officers' literary capacity was limited. And the civilian scholars writing about military officers and military affairs were not that knowledgeable about tactics, weapon technology, etc. Again, at times, the scholarly officials due to their civilian values were often hostile to military affairs. Declaration of war was regarded as a failure of state policy. Hence, physical descriptions of battles and campaigns are lacking.[1] The same assertion applies for theorists of ancient and medieval India. The civilian scholars like Manu, Bana, Kamandaka, etc. focused on the grand strategic aspects which show the interface between politics and military strategy. And all the Classical and medieval Hindu theorists regarded resort to war as the last and ultimate option when everything else has failed.

The most important work in the political-cum-military sphere in the post-Gupta era is Kamandaka/Kamandakiya's *Nitisara*. This work was probably composed between the fifth and sixth centuries CE. The *Nitisara* is a modified

and updated version of Kautiliya's *Arthasastra*. Kamandaka accepts Kautilya as his *guru* (mentor). Kamandaka at times agrees with Kautilya but occasionally also differs from his *guru*. Chandragupta Maurya is regarded by Kamandaka as the ideal *chakravartin* (ruler). The basic tenet of Kamandaka is to warn the ruler against any rash decision to go to war. The ninth *sarga* (chapter) emphasizes that even a victorious campaign results in financial and manpower loss in the ranks of the victors. So, war should be regarded as the last option. After all, the duty of a righteous monarch is to protect his subjects. So, the decision to go to war should be taken only when all attempts at conciliation of the hostile party through diplomatic manoeuvers fails. Thus, unlike Kautilya, Kamandaka discourages a risk-taking strategy for the *vijigishu*. Here, one can discern the influence of Manu's *Manvadharmasastra*/ *Manusamhita* on *Nitisara*. *Manusamhita* was composed somewhere between the beginning of the Common Era and the second century CE.[2]

Manu notes that a kingdom's army must be ready for multitasking. When a polity was assailed by a powerful enemy force, then the army should be divided into two parts. While one part under the *senapati* (general) would contain the enemy force, the other part of the defensive force under the king would go to the principal fort of the kingdom and reorganize itself. Meanwhile the king should request aid from neighbouring countries through diplomatic means. The ruler, while rebuilding his military strength should simultaneously attempt to construct an alliance with neighbouring polities against the invader.[3]

Somadeva Suri (tenth century), author of *Nitivakyamitra*, points to the policy of winning over the relatives of the enemy king. The relatives should be given moral and financial aid and encouraged to rebel against the ruler. Thus, without actually going for costly and dangerous battles and campaigns, a hostile ruler could be defeated.[4] In fact the *Kathasaritsagara* following Kautilya's *Arthasastra* also speaks of biological warfare. These ancient Sanskrit texts advocate the use of *vishakanyas*, i.e. beautiful ladies with poison for assassinating hostile rulers.[5] Such techniques of secret/underhand warfare are categorized as *kutayuddha*.

At the tactical-operational levels, *Nitisara* focuses on the elephants and cavalry as the two principal components of the army. However, the *acharyas* never speak of the *mlechcha* practice of horse archery. Among the cavalry and elephants, the focus for Kamandaka remains the elephants. The *Nitisara* says that the king should lead from the back of an elephant.[6] Here is a break with the Gupta cavalry-centric tradition which emphasized that a ruler should lead from horseback. In fact, Kamandaka is harking back to the practice started by Porus who led his army against Alexander from the back of an elephant. Kamandaka is for organizing the elephants, cavalry and infantry in three different lines during battle.[7] Kamandaka says that the principal instrument for destroying the hostile force would be the tuskers covered with iron armour.[8] And rather than merely frontal charge by the elephants, Kamandaka advocates attacks at the flanks of the enemy force with *koti* (elite) units while remaining stationary at the centre. Kamandaka writes: 'Charging the

outer flanks ... by both *paksa* [flank] units without disturbing ... the reserve units at the rear, or along with his reserve units ... he should attack the rear'.[9] Kamandaka's favourite tactic was to make a frontal attack in order to keep the enemy's attention engaged while launching a sudden attack at the hostile rear. Kamandaka notes that use of guile and treachery in battles are actually techniques of *kutayuddha* which should be used to win victory in the battlefield. At times, everything is free and fair in warfare.[10] This is Kautilya's influence on Kamandaka.

In contrast to the previous theorists, Kamandaka's biggest contribution lies in the field of logistics. He emphasizes that the principal attention of the ruler during a military campaign should be directed towards providing food and water for his combatants and the war animals. Kamandaka writes that camels should be used for logistical purposes.[11] There is a continuous dialectics between theory and praxis of warfare. Kamandaka is not writing in a politico-military vacuum. The Imperial Pratiharas were campaigning against the Arabs in the deserts of Rajasthan. Hence Kamandaka's emphasis on the use of camels for logistical purpose in the desert. In fact, the Ghaznavids during the early eleventh century used 20,000 camels while campaigning in the dry arid tracts of Sind and Gujarat.[12] Again, Kamandaka notes that military campaigns with infantry, cavalry and mainly elephants depended on the *kosa* (treasury). Finance for him was one of the crucial factors, if not the most important one, determining warfare.[13] Now let us shift our focus to warfare in practice.

Warfare and politics in the post-Gupta era

The most important ruler to emerge in North India after the Guptas was King Harshavardhana/Harsha (604/06–48). Our principal sources are the records of the Chinese pilgrim Hiuen Tsang/Hsuan-Tsang and the historical romantic fiction named *Harshacharita* by Banabhatta. The Kingdom of Thaneshwar (in the Ambala District of Punjab) faced threat from the Huns settled in North-West India. The ruler Prabhakaravardhana's son Rajyavardhana was able to defeat the Huns but was seriously wounded in combat. After Prabhakaravardhana, his younger son Harshavardhana ascended the throne. At that time, his kingdom included southern Punjab and eastern Rajasthan. In the east, the Maukharis (who were originally feudatories of the Gupta Empire) of Kanauj and in the west the Huns of Gandhara were the principal enemies of Harsha.[14]

One historian of medieval Chinese warfare notes that the population of the Western Han Empire was 57 million, and it declined to 46 million under the Sui Dynasty and then increased to 49 million under the Tangs in 742. The size of the Chinese field armies varied between 20,000 and 50,000 soldiers. The medieval armies of South China included vagrants, convicts and tribal peoples who were not very reliable. Many of the migrant families were known for courage and skill in combat. They were highly valued as military recruits. For the peasants of South China service was harsh. When an adult male was

taken for military service, he remained in the ranks from the age of 15 or 16 till his sixties. If a man fell ill or was seriously injured and had to be invalided, he had to find a replacement. Desertion became a serious problem.[15] Before the tenth century, the size of the Byzantine field army varied between 4,000 and 12,000 men.[16]

The Chinese Buddhist monk-cum-traveller Hiuen Tsang (who stayed in Kashmir during 631 and 633 and in Punjab during 633–34 and also visited Nalanda and Magadha from 636 to 642) and Banabhatta made some observations about Harsha's army. The cavalry was used as a pursuit force and the infantry was lightly equipped. Banabhatta's *Harshacharita* tells us that at times a striking force comprising of cavalry moved in advance of the main elephant-centric army of Harsha. The cavalry strike force was used for speed and surprise and also for reconnaissance.[17] At the height of his power, Harsha maintained 100,000 cavalry. Horses were obtained from Gandhara, Sind and Persia. Thus, we see that the sources for acquiring horses remained the same both in the Maurya's and Harsha's time, but the cavalry department experienced rapid growth under Harsha. This was due to the increasing importance of cavalry in the intervening period due to successive invasions of the Sakas (Scythians), Parthians and the Huns.[18]

While some of the infantry was equipped with large circular shields and spears, the rest were equipped with long sharp swords. The others had battleaxes, slings, bows and arrows. Shields for the soldiers were covered with leather which was imported from South-East Asia.[19] The war elephants were covered with mail of armour. Sharp spurs were attached to their tusks. Besides the driver for managing the beast, each elephant had two soldiers mounted on its back.[20] Following Kamandaka's principles, Harsha maintained camels for logistical purposes.[21] Camels aided Harsha's campaigns in Rajasthan and Sind.

The city walls in Harsha's time were made of bamboo, wood and at times even with bricks. The houses were covered with thatch and planks, and the walls were white-washed with lime.[22] The Indian armies relied on elephants and infantry for subjugating the fortified cities. In 737, Charles Martel laid siege to the fortified city of Avignon. Battering rams and rope ladders were used by his force.[23]

Banabhatta tells us that Harsha's force comprised contingents bought by his vassal chiefs.[24] However, Harsha's army was not a mob. There was some sort of clothing for the soldiers. Four types of coats were in fashion. The common soldiers wore a sort of modern waistcoat. And there were three types of trousers in vogue: full length, up to the knee and very short length (somewhat like shorts). The soldiers kept long hair which was bound with ribbons. The basic clothing materials for the common people were cotton and silk. And in parts of North India, when the climate became cold the men wore close-fitting jackets which were introduced by the Tatars. Shoes were common among the soldiers, which was a legacy of the Gupta influence.[25]

In his reign, Harsha shifted the capital of his kingdom to Kanauj (Kanyakubja). Harsha was able to conquer present-day Uttar Pradesh. Harsha

reduced the King of Sind to tributary status. However, he was unable to defeat Sasanka of Gauda (Bengal) and the ruler of Assam. Probably in 634 CE, Harsha attacked the Chalukya ruler Pulakesi II. Both the armies comprised elephants and cavalry. However, Pulakesi's army was better equipped and better led. And in the ensuing battle, Harsha was defeated. Harsha died without leaving any heir and his empire collapsed soon after his death.[26]

The Pala Empire centered round Bengal came into existence around 750 CE. The founder of the dynasty was Gopala. And the other strong rulers of this dynasty were Dharmapala and his son Devapala. According to one Arab chronicler of the ninth century CE, the Palas had as many as 50,000 elephants. What is meant here is that the Palas controlled the elephant-producing regions of Bengal, Assam and Orissa. And, theoretically, these regions had a potential elephant population which numbered around 50,000 animals. In fact, the Arab geographer Ibn Khurdadba (d. 912 CE) comes up with a realistic figure for the Pala war elephants: 5,000 beasts. The Pala Army depended mainly on elephants and infantry. Many infantry soldiers carried swords, javelins, daggers and shields (circular and oblong shaped). Some of the infantry were equipped with single curved and composite bows. Each bowman carried two quivers fastened with cross belts (another technique introduced by the Kushanas). The composite bow was an MTR introduced by the Sakas and the Parthians which was absorbed by the Guptas. The Palas did not have access to good-quality horses. So, they did not have horse archers but integrated the composite bows within their elephant-/infantry-centric Military Transformation. Nevertheless, a static composite bow-equipped foot archer was in a disadvantageous position vis-à-vis a mobile horse archer. Not only was the Pala Army huge, but the soldiers also had a sort of uniform. The officers wore leather shoes (another Kushana contribution) and the ordinary soldiers wore wooden sandals (known as *kharams*). The tunic was comprised of a half-sleeved waist-long garment which was tight. The lower part of the body was covered with *dhoti* (cloth draped together) which ended at the knee. Some 10–15,000 men were engaged in washing and mending the clothes of the Pala soldiers.[27]

The Rastrakutas ruled Deccan from 753 CE to 973 CE. The Rastrakuta infantry was equipped with short straight swords, spears and bows. For defensive purposes they carried small circular shields.[28] The Franks of West Europe were equipped with short sword and bows.[29] The Rastrakutas acquired elephants from the forest along the Vindhya Mountain.[30] In the ninth century, one Arab geographer wrote about the Rastraukuta (Balhara) military power in the following manner:

> He gives regular pay to his troops, as the practice is among the Arabs. He has many horses and elephants, and immense wealth. The coins which pass in his country are the Tatariya dirhams. ... Balhara is the title borne by all the kings of this dynasty.[31]

Here is evidence of monetization of the economy of the Rastrakutas partly due to the pressure of war even in the so-called 'feudal age' in India.

The most powerful army south of Narmada was maintained by the Cholas. Aditya Chola (r. 880–907 CE) rose into prominence by defeating his Pallava overlords. The Chola Army was organized in regiments. The names of some 30 regiments like Parthivasekhara, Samarakesari, Candaparakrama, etc. are mentioned in the inscriptions issued in the reign of Rajaraja I. The strike corps of the Chola Army was comprised of elephants. Soldiers mounted on elephants fought from a distance with bows and for close-quarter combat relied on spears. Ordinary infantry was equipped with sword and shield. The Cholas soldiers wore *kancuka* which was a full-sleeved coat, short in length and open in the front.[32] The Cholas taxed the Jain population and imposed punitive fines on the Jaina monasteries to finance their army.[33]

The dominant weapon system in early medieval India (post-Gupta period) was the elephant. In general the idea is that in West Europe the dominant weapon system during the same period, i.e. post the Roman era, was cavalry. However Bernard S. Bachrach asserts about Charlemagne's military campaigns: 'not a significant battle or campaign has been cited in which the cavalry can be shown to have played the tactically decisive role'.[34] For instance, Charlemagne's campaign against the Bretons in 786 was geared to capture the fortifications. Rather than cavalry, the infantry who dug the tunnels, manned the siege engines and scaled the walls with ladders played the decisive role. Bachrach continues that neither Charles Martel nor his sons had heavy cavalry at their disposal. Only a small elite cavalry group in Charlemagne's army wore scale armour coats and helmets.[35]

However, the importance of horse cannot be totally negated. The Byzantine Army of the mid-sixteenth century was 50 per cent cavalry and the rest infantry.[36] The Gurjara-Pratiharas of Kanauj were the only power in India which made cavalry its principal strike corps.[37] The *Kathasaritsagara* notes that cavalry was essential for combat against the *mlechchas* (here meaning Arabs) of Sind.[38] Bachrach notes that the stirrup was introduced in West Europe in circa 700 CE but it had no substantial effect on combat technique between the eighth and tenth centuries.[39] In the case of early medieval India, Andre Wink claims that the introduction of the foot stirrup did not result in the rise of armoured horseman charging with a two-handed lance for breaking up the enemy formation. The Hindu horsemen continued to use the light javelin or spear used with one hand, and the Hindu potentates relied on elephants for breaking up the enemy formation. Neither the Rajput polities nor the Byzantine Empire, being sedentary entities, were able to maintain or develop horse archery skills. And both paid a heavy price during their confrontation with the Turks. Archery in the case of the Indian armies was limited to the foot-slogging infantry and to the soldiers mounted on the back of elephants. They used bows made from cane (composite bows of the Pala infantry were a rare exception, and in Bengal's moist and humid climate such bows did not operate effectively) and their range was shorter than the

composite bows in the hands of the steppe nomadic horse archers. In terms of accuracy, range and speed, the nomadic horse archers had no competitors among the sedentary societies. A skilled horse archer was able to shoot six aimed arrows every minute.[40]

The Carolingian Empire maintained royal stud farms for supplying horses to the monarchy. The Count of the Stables had Marshals who oversaw the estates where oxen and horses were raised and pastured.[41] In the case of India, the *Kathasaritsagara* mentions the presence of elephant forest under direct control of the king. In such forests, poaching and hunting were forbidden and were exclusively reserved for breeding war elephants for royal use. Further, grasslands were also reserved for feeding the royal horses.[42] The Indian polities imported war horses. The horse traders were non-Indians and were organized in guilds, and their base was Lahore. They acquired horses from Afghanistan and Central Asia. The Hindus functioned as intermediaries between the guilds and the Indian buyers. For example, a horse market was organized annually at Karnal in Haryana. The buyers were the royal agents of the Gurjara-Pratihara polity and the provincial lords.[43]

Society, culture and the emergence of Hindu warrior communities

Who the Rajputs were and how they evolved is a matter of historical debate. The Chinese traveler Hiuen Tsang/Hsuan-Tsang (a Buddhist monk) who visited India between 629/630 and 644 noted:

> The sovereignty, for many generations, has been exercised only by the Kshatriyas. Usurpation and regicide have occasionally occurred so that the throne has gone to a different class. Men of valour are selected to be warriors. As the profession is hereditary, they have been able to master the art of war. When they are garrisoned they guard the palaces. When there is war they act as a brave vanguard.[44]

The Rajputs and other related Hindu warrior groups actually emerged from the Kshatriyas for changing social, cultural and political reasons. Rather than entering the stale debate about whether early medieval India experienced feudalism or not, it is much more fruitful for our purpose to examine the changing state–society relationship and the emergence of new social groups. The emergence of Rajputs was the product of both top-down and bottom-up processes which occurred simultaneously and got fused with each other.

The rise of the Rajputs was a social process which involved the adaptation of equalitarian clan-based tribal organization to centralized hierarchic territorially oriented political structures. This process is known as Rajputization.[45] Initially, the tribal leaders in West India with their war bands operating in a semi-pastoral society engaged in cow raiding. The war bands fought for their tribal leaders, protecting the women and animals of their lineages. Brajadulal Chattaopadhyaya writes that land grants in Rajasthan from the seventh and

eighth centuries onwards resulted in the spread of agriculture. This led to peasantization of the tribes and the tribal lineages became ruling clans who came to be termed as Rajputs. On the one hand, the Kshatriyas colonized the semi-pastoral tribes like the Guhilas, Bhils and Ahirs and, on the other hand, many such tribesmen also entered the Rajput ranks as retainers of the lineage chiefs and gradually acquired Kshatriya status. This process can be called Rajputization of the tribes. The lineage evolved into a supra-local and supra-regional power. The polities integrated the lineages within their administrative units.[46]

The term Rajput was derived from the word *rajaputra*. Irfan Habib says: '*Rajaputra*, for example is used for a prince under the Cahamanas, but for the lowest ranking "fief" holder under the Chalukyas.'[47] The Kshatriya landlords known as *thakurs* gradually gained power and acquired the status of *rajaputras*, who were later known as Rajputs. This process started towards the end of the Gupta Empire. One example was the Rathod/Rathor Rajput clan who were initially feudatories of the Rastrakutas. Gradually, as the Rastrakutas declined, the Rathod clan emerged as an independent ruling dynasty.[48] This process actually started even before the Rastrakutas. The Gupta Empire in its later stages appointed wardens of the marches known as *samantas*. They were semi-autonomous and were in charge of guarding the strategic frontiers. The *samantas* enjoyed freedom in their internal affairs and became feudatories of the ruler.[49] The *bhogikas* (administrative officials) of the late Gupta Empire were paid in land and these posts became hereditary.[50]

The *Manavadharmasastra* provides for non-religious land grants to revenue officials in place of salaries. The practice of issuing land grants to the administrative officials started under the Satavahana Empire and later became common. The issue of land grants with administrative power by the state to a class of officials and local elites resulted in the emergence of a class of semi-autonomous landowners with substantial military and economic power in the post-Gupta political landscape. The polities expanded by assimilating the tribes and the landowners into a feudal hierarchy by converting them into Kshatriya caste. The overall ideology used in this state-sponsored conversion was Brahmanism.[51]

The Brahmins were also granted land in order to colonize the tribal belts and to convert the tribes into Sudras who tilled the land and expanded the boundaries of agricultural economy.[52] Temples emerged as estate owners in South India after the fifth century CE. And in North India, religious grantees did not have to pay taxes to the state. Most grants by the king after the seventh century CE gave away the villages along with lowland, fertile land, water reservoirs, all types of trees, bushes, pasture grounds, etc. After the tenth century, the land grants emphasized the importance of giving away even cash crops like cotton, hemp, coconut trees, etc.[53] R.S. Sharma writes: 'It was a religious attempt at social reconciliation and integration rather than at the accentuation of the social conflict.'[54] In fact religion was harnessed to buttress the legitimacy of the socio-political order. The monarchs and the landowners gave financial subsidies to Saivite Hinduism which emphasized *bhakti*

ideology. The head of the monastery became the king's principal advisor (*rajguru*) in administration. In return, the ecclesiastical chief of the monasteries emphasized devotion of the common mass to their great lord.[55] The worship through *bhakti* as God, a lord located in the temple, was the key ideological strand of feudal ideology in early medieval India.[56]

Early medieval China, like post-Gupta India, also witnesses a sort of gentrification. Towards the late sixth century, the Western Wei and the Northern Zhou supplemented their core North Asian cavalry with the inclusion of Chinese militias of the local magnates. This was the origin of the territorial soldiery system (*fubing*). The Jin Empire was weak compared to the Han Empire because a large portion of its manpower and tax base was transferred to the control of the great landowning families. The Jin rulers enfeoffed their extended lineage by granting territorial fiefs. Some of the fiefs included from 5,000 to 20,000 households. Like the post-Gupta Indian armies, many of the imperial armies of the Chinese polities between 300 and 900 CE were comprised of followers of the lesser chiefs. Many of these lesser chiefs, as in India, were local magnates who had converted some of their agricultural dependants into part-time soldiers. In addition, many military commanders also raised armed private retainers. The posts in these private forces were hereditary. The private armed retainer was known as *buqu* in Chinese. Similarly, the later Roman Army also had *bucellarii*.[57]

The Merovingian magnates of Gaul employed personal followings of armed retainers. The rulers purchased the loyalty of these magnates and their armed retainers by providing gifts and assigning land grants. Before his death in 768, Peppin placed entire districts (*civitas*) under his counts (*comites*). The counts were in charge of repairing fortifications in their areas and commanded the garrisons at the forts and the fortified cities. The *comites* evolved from Merovingian practice. Generally the *comites* were local elites with bands of their private armed followers who were given title and drawn into the monarchical fold.[58] According to one scholar, the Carolingian Army was comprised of warbands under the nobles for whom aggressive warfare was an opportunity to acquire plunder.[59] And by the early eleventh century, the Byzantine central government lost most of its authority. A group of powerful landowners emerged who maintained their own private armies.[60]

Culture at times significantly shaped military tactics. Both the Rajputs and the Carolingian cavalry charged pell-mell with swords.[61] The Rajput culture was against fighting dismounted. They preferred to fight on horseback. This was partly related to the fact that many Central Asian clans like the Sakas and the Parthians who settled in India and intermarried with the local communities were absorbed as Kshatriyas within the Rajput fold.[62] So, the equestrian culture of the Central Asian nomads passed among the Rajputs. A somewhat similar process could also be traced among the early medieval West Europeans.

The Alans were an Indo-Iranian people like the Sarmatians. Both of them inhabited the South Russian steppes. During the late fourth century, the Alans

were pushed westwards by the Huns. In the fifth century, the Romans settled the Alans in Armorica. The Alan military culture consisted in fighting mobile battles from horseback, and they fought from a distance with missile weapons. The Alans covered their mounts and the cavaliers with armour. They like the Huns and the Rajputs considered fighting on foot as degrading. In the ninth century CE, the Armorican horsemen (Bretons) were equipped like the Alans and fought like them. However, the Alans hurled javelins from horseback, while the Magyars (Huns settled in Hungary) fought with bows from horseback. One may speculate that the Alans being cut off from their steppe homeland for such a long time lost their skill of mounted archery but nevertheless retained their equestrian skills. While the Magyars, being physically closer to the steppes of South Russia, were able to retain their horse archery skills. What had happened to the Armoricans might have had happened to the Rajputs also. The Alan bias against fighting on foot persisted till the twelfth century.[63] A similar case could be made for the Rajputs when they faced the Turks in the twelfth century, the subject of the next chapter.

Conclusion

This chapter shows that post-Gupta era India did not experience a Dark Age as regards state building and theory and practice of warfare. The post-Gupta polities were somewhat weaker than the Maurya Empire but nonetheless they were not theater states. Their capacity to mobilize military manpower was quite impressive by contemporary Eurasian standards. And the armies of this period in India were not armed mobs or militias. Overall the trend which was visible was that the proportion of cavalry went on decreasing in the armies as one moved from North-West India towards East and South India. And the dress of the soldiers changed from boots and jackets to *dhoti* and sandals as one moved from Punjab to East and South India. Large standing armies with uniform and logistical back up were maintained by the states. Further, we see the evolution of a sophisticated military theory which harped on elephant-centric army with cavalry as a supplementary branch. The generation of this theory of warfare was to a great extent dependent on physical terrain and climate. This military theory to an extent legitimized the elephant-centric Military Transformation in early medieval India's Hindu polities. Both in early medieval India (before the advent of the Turks) and in the post-Roman era, cavalry was not dominant. The image of Knights in West Europe (and their equivalent, the Rajputs in post-Gupta India) mounted on heavy horses clad with iron armour and charging recklessly with swords towards their enemies is a bit overdrawn. In fact, the picture of a linear rise of the importance of cavalry in warfare from the post-Hydaspes era, in the case of India, is faulty. The Hindu elephant-centric armies faced defeat when they encountered the steppe nomadic archery of the Islamized Turks from the tenth century onwards. And the mounted archers established their polity in India. This issue is taken up in the next chapter. Interestingly, a somewhat similar development

also occurred in China. The Tang Empire disintegrated in the late eighth century, and in the tenth century several generals and steppe nomads skilled in horse archery established dynasties which fought against each other.[64]

Notes

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3 G.P. Singh, *Political Thought in Ancient India*, 1993, reprint, New Delhi: D.K. Printworld, 2005, p. 113.
4 Rashmi Upadhyaya, 'Military Strategy of the Rajputs during the Early Medieval Period', in Shahabuddin Iraqi (ed.), *Medieval India 2: Essays in Medieval Indian History and Culture*, New Delhi: Manohar, 2008, p. 174.
5 *Kathasaritsagara*, by Somadeva Bhatta, 5 vols, tr. into Bengali by Hirendralal Biswas, 1975, reprint, Kolkata: Academic Publishers, 1983, vol. 1, p. 154.
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9 My translation differs from Sisir Kumar Mitra's translation. See *The Nitisara* by Kamandaki, p. 442. The Sanskrit verse is given on the same page.
10 *The Nitisara* by Kamandaki, pp. 406–07.
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4 Horses and government under the sultans: 700–1500 CE

> Philosophers have said that there are three countries celebrated for certain peculiarities; Hind is celebrated for its armies, Kandahar for its elephants, and the Turks for their horses.
>
> Rashid ud din, 1310[1]

Introduction

Several extraneous factors influenced the trajectory of South Asia's history during this period. The rise of Islam in Arabia had repercussions on the western periphery of the subcontinent. Later, the breakdown of the Caliphate and the internecine struggles among the post-Caliphate states in Central Asia indirectly resulted in the expansion of Islam in the subcontinent. Finally, the Mongol storm that burst over Eurasia had serious ramifications on the South Asian scene. So, the history of India cannot be delinked from what was going on in Afghanistan and in Central and West Asia. Overall, this period witnessed the transition from slave armies to land-grant-based cavalry forces. This period witnessed the mounted nomadic warriors from Arabia and Central Asia gradually settling down and establishing quasi-bureaucratic polities in the sedentary societies. Now let us glance back at South Asia after the death of the Prophet Muhammad.

Arab invasion of Sind

> God says – Give no quarter to the infidels, but cut their throats.
>
> Al-Hajjaj to Muhammad bin Kasim[2]

For the Arab invasion of Sind, which was the first instance of Islamic military intrusion into South Asia, we have to depend on the sources generated by Arab scholars. Naturally, such accounts depict the conquest from the Arab perspective. King Dahir was ruling Sind when the Arabs intruded into the western frontier of the subcontinent. Sind's principal port was Debal (modern Karachi), which was situated west of the River Mihran (Indus/Sindhu)

towards the sea. The countryside around Debal was fertile for grain cultivation. Debal was also an important centre of sword production. The inhabitants maintained themselves by engaging in commerce. The region between Debal and Mansura was known as Nirun. The border of Dahir's kingdom extended up to Multan.[3]

Al-Hajjaj was the *Caliph*'s Governor in Persia (*ajam*). The reigning *Caliph* was Walid bin Abdul Malik (705–15). Hajjaj's son in law, Muhammad bin Kasim/Qasim, aged only 21 years, was ordered to lead the invasion. Muhammad bin Harun, the Governor of Makran/Mekran commanded the advance guard of Kasim's force. Kasim had with him a 6,000-strong cavalry contingent drawn from Syria and Iraq, 6,000 camel riding soldiers and a baggage train comprising 3,000 camels. As a point of comparison, at the Battle of Yarmuk (636) fought in Syria in which the Islamic force destroyed the Byzantine Empire, the soldiers of Islam numbered between 20,000 to 40,000 men. And at the Battle of Al-Qadisiya (636) in Iraq where the Sassanid Army was destroyed, the Muslim army numbered between 6,000 to 12,000 men. Initially, the Islamic force which operated in southern Iraq numbered only 2,000 to 4,000 men. In Egypt, the Islamic expeditionary force had some 15,500 soldiers.[4]

The Arabs inherited the Sassanid tradition of maintaining heavy cavalry. The Sassanid heavy cavalrymen were equipped with heavy lances, swords and maces, and the horses were also protected with armour.[5] John France writes that the Muslim heavy cavalry with horse armour surprised the troopers of the First Crusade. By the end of the twelfth century, the Western armies started covering their horses with armour as a result of military interaction with the Islamic forces.[6] The *Chach Nama*, one of the principal accounts of the Arab invasion of Sind tells us about Muhammad bin Kasim's cavalry in Sind: 'The Arab army marched on till it reached the fort of Bait, and all the horsemen were clad in iron armour.'[7]

The camel baggage train of the Arabs was eminently suitable for operating in the desert region of Sind, where cavalry and elephant-centric Hindu armies were at a disadvantage. Sind was famous for camel breeding. The Sind camels were crossbred with the Bactrian camels and exported to Khorasan.[8] Despite the availability of camels, Dahir's army, unlike the Arabs, did not utilize camels as mounts or in the baggage train. Hence, not the availability of raw materials but military doctrine and practice were the crucial integers in the formation of the force structure of a particular region at a particular time. The term naptha means Greek fire. The availability of naptha and other oil derivatives in surface deposits explains the prevalence of fire-throwing techniques in the Middle East. Igniting such 'sticky fire' in the wet weather of West Europe was almost impossible.[9] Besides the camel warriors who used naptha fire, the Arabs also imported five *manjaniqs* by ships.[10]

The *manjaniq* was a catapult and each machine for operation required 500 men. They were so heavy that they could only be transported by ships. The *manjaniq* was like a big cricket bat moving on a pivot. The men pulled back

one beam (*palla*) so that the other beam moved forward and hit the ball. The *manjaniq* ball, known as *sang-i-maghribi*, was an artificially rounded piece of stone about the size of a football. The masons chiselled them to give a round shape. Probably, the Arabs had learnt the use of *manjaniqs* from the Byzantine Empire.[11] The traction-trebuchet originated in China and was transmitted to Europe during the ninth century CE by the Arabs. It was a beam pivoted between two high uprights. When the beam was pulled at one end by a team of men, the other flew up until a missile was released in an arcing trajectory either from a cup or from a sling. The pulling end of the beam was shorter in the ratio of 1:5 and the efficiency of the engine was increased by the use of a sling on the throwing end.[12] The Muslim chroniclers speak of *manjaniqs*, *maghribis* and *iradas* interchangeably. Probably, they were mangonels, onagers, etc. The introduction of the three new weapon systems, i.e. MTRs: camel-riding soldiers, naptha weapons and *manjaniqs*, within the format of warfare as practised by the Arabs in the western fringe of India, represented a case of RMA. These three weapon systems gave the Arabs an edge over their Hindu opponents both in sieges and battles.

Thanks to the *manjaniqs*, the fortified centres of Sind fell easily to the Arab besieging force. When Muhammad Kasim reached Debal, he unloaded men, arms and the war machines form the ships. Then, he dug an entrenchment which was defended with spearmen, and orders were given for setting up the *manjaniq*. The Arab warriors were divided into various contingents and each body of warriors was organized under their own tribe's banners. In order to hit the targets of varying ranges and heights, the *manjaniq* could be made shorter or longer by changing the length of its beam. And then the *manjaniq* was aimed by the *manjaniq*-master. The garrison of Debal made an assault on Kasim's entrenched camp but was hurled back. Then, the Muslim infantry brought ladders and scaled the walls of the city. Once inside, the Muslim soldiers slaughtered the demoralized garrison.[13]

Dahir made a mistake in thinking that either the Arabs would be delayed before Debal for a long time or they would be satisfied with a plundering expedition in Lower Sind. So, Dahir took no steps to guard the crossing of Mihran, the principal river which flows through Sind. Kasim's force using boats advanced up the river quickly and, through Kasa and Rasil, reached Rawar Fort.[14] In June 712 Dahir's army took position near the Fort of Rawar. After five days of continuous battle, Dahir's army broke. Kasim attacked Dahir's force both from the front and the rear. Dahir, like Porus, led from an elephant. Both exhibited what could be categorized as 'command from the front'. In contrast, Kasim exhibited a managerial form of command which meant directing different branches of the army and launching attacks against the weak points of his enemy at crucial junctures. The *Chach Nama* provides a glimpse of the 'face of battle' from the top:

> Dahir ... urged his elephant against the Muslim army. Muhammad Kasim told the naptha throwers that the opportunity was theirs, and a

> powerful man, in obedience to this direction, shot his naptha arrow into Dahir's *howda*, and set it on fire. Dahir ordered his elephant driver to turn back, for the elephant was thirsty and the *howda* was on fire. The elephant heeded not his driver, but dashed into the water, and in spite of all the efforts of the man, refused to turn back. Dahir and his driver were carried into the rolling waves. Some of the infidels went into the water with them, and some stood upon the banks; but when the Arab horsemen came up, they fled. After the elephant had drunk water, he wanted to return to the fort. The Muslim archers plied their weapons, and a rain of arrows fell round. A skillful bowman aimed an arrow, which struck Dahir in the breast, and he fell down in the *howda* upon his face. ... Dahir got off his elephant, and confronted an Arab; but the brave fellow struck him with a sword on the very centre of his head, and cleft it to his neck.[15]

While dusk was falling, Dahir fell dead. Next, the Fort of Rawar, garrisoned by 15,000 troops, held out against the Arab force. However, Kasim's siege engines were easily able to destroy the walls of the fort and the latter was captured.[16] Mangonels, ballistas and mines allowed the Arab Army to occupy Brahmanabad Fort, where a garrison some 15,000 strong capitulated and 6,000 of the garrison died.[17]

Within three years, Sind was conquered. The expedition proved economically profitable. Initially, Hajjaj had to spend 60,000 *dirhams* to finance the expedition, but the returns were calculated to exceed 120,000 *dirhams*. Further military expansion of the Arabs into the interior of India was checked by political wrangling within the Umayyid Caliphate. Hajjaj died in 714 and Walid passed away in 715. The new *Caliph* Suleiman Bin Abdul Malik ordered the arrest and execution of Kasim.[18] So, at times, military superiority of a polity was nullified by messy politics. In 750, at the Battle of Tell Kushaf, the Abbasid Abd Allah Ali defeated the Umayyid *Caliph* Marwan II.[19] This battle signified the collapse of the Umayyids and the Abbasids did not direct their energy towards the Hind.

The Ghaznavid invasions of India

The rise of the Ghanzavids, which shaped the trajectory of early medieval India's history, was partly due to shifts in power-politics in Central and West Asia. In the tenth century CE, the Caliphate had disintegrated. Transoxiana and Khorasan were ruled by the Samanids (874–999) from Bokhara. The Samanid Empire's power extended over Khwarizm, Mawaran un nehr, Jurjan (a small province north-east of Khorasan), Khorasan, Seistan and Ghazni.[20] And their rivals were the Saffarids in Seistan. The Saffairds gradually expanded into Bust, Zabulistan, Ghazni and Kabul.[21]

Transoxiana comprised of Zarafshan, the valleys of Oxus (Amu Darya) and Jaxartes (Syr Darya). Slave trade was an important element of Transoxiana's economy.[22] In the second half of the eighth century, slave soldiers

comprised the crack troops of Islam. In the beginning, the Islamic forces comprised of Bedouins. Raiding and fighting were an integral part of their lives. In the seventh century, the Caliphate had tribal armies. The forces were recruited, commanded and deployed in tribal groups. The Arabs assembled under their tribal leaders and were led by the tribal chieftains, who used tribal banners and motivated the soldiers with tribal war cries. The tribal forces fought on foot when required. The Syrian infantry and Syrian archers played an important role at the Battle of Harra outside Madina/Medina. These two components of the army were responsible for the victory of the Umayyids in this battle. The infantry was equipped with bows, spears and swords. Horses were used as battlefield taxis as the chariots were used in Homeric battlefields. Cavalry was used for scouting and reconnaissance and for turning the flanks of the enemy. However, Hugh Kennedy writes, horsemen on their own could not hold their own against the well disciplined and well equipped infantry. During the first half of the seventh century CE, in the Islamic ORBAT, the foot archers were placed at the front and behind them infantry with helmets and spears formed a line. In battle, the Islamic army had a vanguard (which lead the advance) and a rearguard (which protected the rear) besides the main body. At times, the Islamic army was divided into three bodies: centre, left and right wings. The Islamic army was deployed either in the crescent shape or in the curve shape. In the crescent shape, the two wings advanced and the centre held back. This left the two wings exposed and, if the wings were threatened, the commander sent squadrons to protect the flanks of the wings. In the curve shaped deployment, the centre advanced and the two wings held back. If the two flanks of the centre were threatened, the commander sent reinforcements for their protection. Battle was comprised of shooting arrows and then throwing spears and finally drawing swords and hacking at enemy soldiers to the right and left.[23]

The Abbasid Caliphate (751–851) used the institution of *ghulam/ghilman*. *Ghulam* was also known as *mamluk*. When *Caliph* Al-Muqtafi ascended the throne at Baghdad, due to pressure from the Seljuk Sultan Ghiyath al-Din Masud, the ruler of Iraq and western Iran, the former could not get any Turkish *mamluks* who were used as mounted archers. So, the *Caliph* depended on Armenian and Greek *mamluks*. Basically, the kernel of the Muslim armies of that time centred round the *ghulams* and all the contemporary chroniclers agreed that in prowess, courage, valour and intrepidity, the Turks were the best. The Turkish *mamluks* were considered better than the Greek, Armenian or other ethnic groups.[24] The *ghulam* institution constituted the backbone of the Samanid Army. Later, the Ghaznavids also utilized the *ghulam* institution which then entered the western fringe of the Indian subcontinent. The rulers of Ghazni like Alptagin, Subuktagin and others were actually Samanid *ghulams*. Besides the *ghulams*, the Samanid and the Ghaznavid armies also comprised temporary volunteers like the *ghazis*.[25]

David Ayalon focuses on the Abbasid Caliphate in initiating the transition from tribal Arab infantry forces to Turkish *ghulam*-dominated contingents in

the Army of Islam. Actually this process could be traced earlier. In fact, it was a gradual process that occurred in several halting stages and not as a Military Revolution. As early as the second half of the seventh century CE, the combat effectiveness of the Turkish mounted archers became clear to the Arabs. Al Biladuri in his *Futuha ul Buldan*, finished in the last decade of the ninth century CE, notes:

> In the year 664, and in the days of the Caliph Muawiya, Muhallab son of Abu Safra made war upon the same frontier, and advanced as far as Banna and Alahwar, which lie between Multan and Kabul. The enemy opposed him and killed him and his followers. In the land of Kikan, Muhallab encountered 18 Turki horsemen, riding crop-tailed horses. They fought well but were all slain. Muhallab said, 'How much more active than we those barbarian are.' ... Muawiya himself sent Abdullah ... to the frontier of Hind. He fought in Kikan and captured booty. Then he came to Muawiya and presented to him some Kikan horses. He ... then returned to Kikan, where the Turks called their forces together and slew him.[26]

The Caliphate based at Baghdad declined because the Samanids cut off the flow of Turkish recruits from the region beyond Oxus to the Caliphs. Instead, the Samanids themselves raised a strong *mamluk* corps.[27] Any power ruling the region between south of Oxus and Afghanistan by cutting off the supply of horses and steppe nomadic recruits could weaken the military power of the polities in South Asia, Persia and Iraq (Mesopotamia). In 961, Abdul Malik, the Samanid ruler of Bokhara, died. Abdul Malik's empire comprised of Transoxiana, Khorasan and Helmand Valley. Abdul Malik's son and successor Abul Mansur was forced to accept the independence of his disloyal Governor Alptagin, a Turkish *ghulam*. Alptagin was the Governor of Khorasan. In 962, Alptagin rebelled against the Samanids and established himself at Ghazni as an independent Sultan. The Ghaznavid Dynasty established by him continued till 1186. The Samanid ruler Mansur twice sent armies to defeat Alptagin but failed. When Alptagin died in 963,[28] his slave general Piritagin became the ruler. In his reign, Ghazni clashed with the Hindu Kingdom of Kabul (Hindusahis). The Hindusahi (of Brahmin caste) ruler Raja Jaipal, son of Hutpal, was watching anxiously the rise of a new rival power centre at Ghazni. The Hindusahis ruled over Kabul, Lamaghan, the region around the River Chenab, Multan and Poonch. Waihind in South Kashmir was the capital of this kingdom. The Hindusahis had another capital at Lahore in Punjab.[29] The Hindusahis controlled eastern Afghanistan, West Punjab and South Kashmir from 850 onwards.[30] Piritagin and Subuktagin (another *ghulam* of Alptagin) jointly led the army and defeated the Hindusahis. The Turkish *amirs* considered Subuktagin to be more capable than Piritagin and replaced the latter with Subuktagin.[31]

Subuktagin was a Turk by descent. He was educated and taught in the use of arms with the other slaves of Alptagin. Subuktagin (r. 977–97) was born in Juq, a small principality in Turkestan and was captured by some Turkish raiders, taken to Bokhara and sold to merchant Abu Nasir who then sold him to Alptagin. Later, Abu Nasir married his daughter to Subuktagin. Subuktagin expanded his sway over Ghazni and Zabulistan.[32] Subuktagin captured the fortress of Bust (capital of Zabulistan and an important trade centre in the commercial route between India and Persia) and then took Kandahar.[33]

While Jaipal was preparing for a raid into Ghazni, Subuktagin defeated him in a battle fought near Ghuzak Hill (between Ghazni and Lamaghan). Jaipal made peace by promising an indemnity. However, on returning to Waihind, Jaipal refused to pay the indemnity and maltreated the Turkish *amirs* who were sent to collect the required sum. In retaliation, Subuktagin launched another invasion. The core of his army remained the *mamluks* but Subuktagin supplemented his force by hiring men from the Afghans (especially the Khalji tribe) under his dominion. Here is an example of the Afghan military labourers being available for hire by any warlord preparing to launch a plundering expedition. Subuktagin captured the Helmand Valley up to Lamaghan.[34]

The Hindu kings of Delhi, Ajmir, Kanauj and Kalinjar, along with Jaipal formed a confederacy. Religion definitely played a part in uniting the quarrelsome Hindu princes against the common 'other': the Islamic Turks. The confederacy mobilized about 100,000 infantry and cavalry. The objective was to destroy Ghazni. However, lack of collective training and absence of unity of command reduced the combat effectiveness of this cumbersome host which became an unmanageable crowd in the battlefield. In contrast, Subuktagin's cavalry organized in contingents of 500 each were able to push back the unruly Hindu host equipped with spears, swords and elephants. The Rajput cavalry was inferior compared to the Ghaznavid cavalry. Better horses along with superior command arrangements resulted in Ghorid victory. As the defeated Hindusahi Army fled to the banks of the River Nilab, the Ghaznavid cavalry pursued them and slaughtered large numbers of the defeated and demoralized Rajput host. Jaipal was forced to surrender 1 million *dirhams* and 50 elephants.[35]

A comparison with a contemporary Chinese military history will put the Ghaznavid-Rajput tussle on a wider canvas. One of the most important battles of tenth-century China was the Battle of Gaoping (954). The Northern Han ruler Liu Ching with 30,000 infantry and cavalry and 10,000 Kitan cavalry invaded Zhou domain. Chai Rong the Zhou ruler also assembled a 30,000 strong force. In the ensuing battle the Kitan cavalry did not take part. So, the combatants on either side numbered 30,000 soldiers each.[36] Subuktagin annexed the region west of Nilab and appointed one of his officers with 10,000 horses to administer Peshawar. The Afghans (including the Khalji tribe) who resided in the mountains accepted Subuktagin's supremacy. Subuktagin could not pursue his policy of making further inroads into

Hindustan due to the turbulent Central Asian politics. At Nishapur (capital of Khorasan), Subuktagin's eldest son Mahmud was stationed with a small force. Faik and Boo Ali Hasan jointly attacked Mahmud and defeated him. Subuktagin marched from Ghazni with the main force and defeated these two warlords.[37]

Subuktagin died in Balkh (a city near Oxus west of Bokhara) in 997 at the age of 56 and was succeeded by his son Mahmud (b. 15 Dec. 967/ 971?). However, Mahmud had to fight a civil war with his brother Ismail to ascend the throne. When Subuktagin died, Mahmud was at Nishapur and the nobles at Balkh raised Ismail to the throne. Both the brothers advanced towards Ghazni. Ismail used elephants in his army. The battle was long and bloody. Mahmud at a critical moment charged at Ismail's centre which then broke up. Mahmud in a way was impressed with the elephants and would use them later in his own army. Mahmud, in history known as Mahmud of Ghazni, had participated in the Indian campaigns with his father. And Mahmud, after becoming the Sultan (r. 998–1030), systematized the raids into North and West India as a long-term policy of the Ghaznavid Empire. Mahmud in total launched 17 raids into India. Mahmud's objective was to loot the temples and cities of India which were storehouses of wealth.[38] This loot and plunder was used by Mahmud to fight the Central Asian nomads who threatened the Ghaznavid Sultanate in Afghanistan.

The first invasion occurred in September 1000 when Mahmud advanced towards the frontier forts of Khyber Pass. This invasion was geared towards reconnaissance and collection of data regarding possible terrain and routes for launching future plundering raids into India. Long before the British 'mania' in the nineteenth century with the defence of the North-West Frontier passes against the Afghans and phantom Russian threat, the Khyber Pass was indeed the strategic gateway for invasions of India launched from Central Asia.[39]

During September 1001, Mahmud advanced with 15,000 cavalry (10,000 under direct command of Mahmud) towards Peshawar. Jaipal confronted him with 12,000 cavalry, 30,000 infantry and 300 elephants. On 27/28 November 1001, both the armies clashed with each other. Jaipal was captured after the death of 5,000 of his soldiers. In order to put Mahmud Ghazni's campaign in perspective, an example could be given of two near contemporary European campaigns. In 1066, the Norman Army that conquered England mobilized 14,000 men, including 7,000 effectives, and, of the latter, 3,000 were cavalry. And Guiscard's army which attacked the Byzantine Empire in 1081 numbered some 15,000 men. After the Battle of Peshawar, Jaipal committed suicide and his son Anandpal became the ruler of Hindusahi Kingdom.[40]

In October 1004, Mahmud started against Raja Bij/Baji Rai of Bhatinda. This place commanded the route to the Gangetic Valley and Baji Rai did not aid Mahmud of Ghazni during his conflict with the Hindusahis. In a battle fought near Bhatinda, Baji Rai was completely defeated and committed suicide. Mahmud's fourth invasion was geared to the capture of Multan. In March 1006, Mahmud started from Ghazni, crossed the Indus near Peshawar

and laid siege to Multan. Abul Fath Daud of Multan requested peace. Mahmud asked him to relinquish his Carmatian creed and gave Sukhpal (grandson of Jaipal) the order to continue a mopping-up operation in Multan. Sukhpal, who was in Ghazni as a hostage after Jaipal's defeat, had accepted Islam. He was named Nawasa Shah and became a vassal of Mahmud. However, Nawasa Shah joined with Daud and rebelled against Mahmud. The rebellion occurred at a difficult time for Mahmud because he was busy fighting his own father-in-law, Ilak Khan, the ruler of Kasghar. Both fell out over the control of Khorasan. However, Mahmud rose to the occasion and pursued Ilak Khan towards Oxus. Then, Mahmud turned his attention towards India. This resulted in Mahmud's fifth invasion. In the winter of 1007, Mahmud appeared before Multan and defeated Nawasa Shah, who fled towards the Salt Range in West Punjab.[41] It would be simplistic to categorize Mahmud's invasion of India as a binary Muslim-Hindu conflict. Mahmud was fighting other Muslims, in fact of the same ethnic stock (Turks) and also the Hindus. And the Hindus, besides combating the Islamic Turks, were also busy fighting each other further down within the interior of the subcontinent. Religion was definitely important, but political ambition and nature of politics was more important in shaping the dynamics of conflict.

Mahmud's sixth invasion was directed against another Rajput confederacy formed at the instigation of Anandpal, a grandson of Jaipal. The rajas of Ujjain, Gwalior, Kalinjar, Kanauj, Delhi and Ajmer/Ajmir joined forces. In December 1008, Mahmud marched from Ghazni, crossed the Indus and defeated the Rajput host at the plain of Waihind. The seventh invasion was actually a continuation of the sixth. Mahmud moved towards the Nagarkot Fort. After a siege of three days Mahmud captured it and then marched further to Narayanpur (Alwar) in Rajasthan. The raja was defeated and Narayanpur was captured.[42]

Daud of Multan still remained a thorn in Mahmud's side. In the winter of 1010, the occasion of his eighth invasion, Mahmud marched towards Multan and captured Daud, who was then sent to Kandahar (Gandhara) as a prisoner. In October 1012, Mahmud started against Thaneshwar. Raja Ram opposed Mahmud near Sutlej. Mahmud defeated him but returned to Ghazni. Probably, Mahmud's logistics was not yet ready to penetrate deep inside the subcontinent. In 1014, Mahmud marched against Nandana Fort in the Salt Range which was under Trichinopal of Lahore. Trichinopal left his son Bhimpal in defence of the fort and went to Sangramaraja, the ruler of Kashmir for aid. Before these two could combine, Mahmud captured Nandana and Trichinopal was defeated in a battle near Jhelum.[43]

In 1023, the Ghaznavid Army under Mahmud (excluding the provincial garrisons) comprised 54,000 cavalry and 1,300 elephants effective for operation. In total, Mahmud had some 2,500 elephants.[44] As a point of comparison, the Tang Dynasty in 1076 launched five expeditionary forces against the Tanguts. The first expeditionary army comprised 60,000 soldiers and 60,000 porters, the second expeditionary force had 93,000 soldiers and the third expeditionary

force had 87,000 troops and 95,000 porters. The fourth and fifth expeditionary forces had 50,000 and 30,000 soldiers, respectively.[45] Besides the wealth of Hindustan, the Ghaznavids also utilized manpower and animal resources of the subcontinent in their war making. Like the Seleucids, the Ghaznavids were impressed by the Indian use of war elephants and integrated the latter into their force structure. There is some stray evidence that the Sassanids also used war elephants against the Arabs. But, it did not prove to be very effective.[46] The use of war elephants by the Ghaznavids against their Central Asian opponents could be categorized as an MTR. However, this innovation had no lasting impact upon the Central Asian Turks as the use of war elephants outside South Asia was rejected by them after the decay of the Ghaznavids.

Mahmud was able to attract thousands of *ghazis* from Transoxiana for his Indian campaigns.[47] Mahmud also enrolled Hindus in his army, and the latter rose to senior ranks in his military machine.[48] However, the key players in the Ghaznavid Army remained the Turks who from their bows shot twin barbed arrows.[49] The Central Asian nomads, including the Mongols, used composite bows. They were made from layers of horn, wood, sinew and glue. The range of this weapon varied between 300 metres (effective range) and 500 metres (maximum range). The crossbows used by the West Europeans had an accurate range of 75 metres. The Welsh and English longbow of the fourteenth century had an effective range of 220 metres. The nomads used thumb rings in order to pull the bow strings back. The thumb ring prevented strain on the thumb. Thus the thumb rings enabled the archers to draw the bows much further with less strain. The thumb ring caused less drag on release of the arrow and thus enabled quicker shooting. However, the composite bow became dysfunctional in damp weather and during rainfall.[50] The cavalrymen, besides bows and arrows, were armed with *qalachuri* (long curved) swords.[51] This sword was a slashing sword and had a longer reach compared to the Rajput straight *khandas* which were suited for stabbing only. The composite bows, better mounts and the *qalachuri* swords were three MTRs which together constituted an RMA that gave the Ghaznavids an advantage against the Hindus in close-quarter combat.

The Ghorid invasions and establishment of the Delhi Sultanate

> Kingship is the army, and the army is Kingship.
>
> Ziauddin Barni/Barani[52]

After the death of Mahmud of Ghazni (22 April 1030), the Ghaznavid Empire contracted due to pressure from the Central Asian Turks. As a result, the Ghaznavid Army also shrunk in size. In 1051, the Ghaznavid standing army comprised 5,000 cavalry, 2,000 infantry and five war elephants. The infantry was armed with battleaxes and iron-pointed spears. *Iqtas*, land grants, which had evolved in Iraq and West Persia during the ninth and tenth

centuries, were continued by the Seljuqs and extended into East Persia. And hereditary *iqtas* were prevalent in the Ghaznavid Empire.[53]

As the Ghaznavid Empire crumbled, the deathblow was given to it by the rising power the of Ghorids (Ghurids) of Ghor/Ghur and the Seljuk Turks. Ghor is a mountainous region in Central Afghanistan.[54] The Arabs failed to penetrate into the narrow mountainous defiles of Ghor. The five natural mountains provided protection to the mountainous tract of Ghor. The capital of Ghor was Kushk, which is located at the foot of the mountain named Zar-i-Margh. Sultan Bahauddin Sam, son of Izzuddin transferred the capital to Firuzkoh and constructed four fortresses to protect his kingdom. The fortress of Sher Sang was in the mountains of Herat, the fortress of Bindar (Pindar) in the hills of Gajiristan, the fortress of Fiwar between Gajiristan and Faras (Baras) and that of Kasar in Garmsir District. Ghor was famous for the production of shields and armour due to the presence of iron mines. The Ghorids captured Lahore and seized Sultan Khusrau Malik, the last Ghaznavid Sultan.[55] Besides deploying excellent cavalry, the Ghorid Army also had disciplined infantry. An account of the battle between Daulat Shah of the Ghaznavids and the Ghorids under Sultan Ala-ud-din (not to be confused with Ala-ud-din Khalji) proves this point:

> Daulat Shah, son of Bahram Shah, with a body of cavalry and an elephant, made a charge. Sultan Ala-ud-din directed the foot soldiers should open their rank of *karwahs*, in order to allow Daulat Shah to enter with his whole division. They opened their ranks accordingly. When Daulat Shah with his body of horse and the elephant, entered, the infantry closed the breach in their ranks again, and completely surrounded that Prince on all sides; and he, with the whole of that body of horse, were martyred, and the elephant was brought to the ground, and also killed.[56]

The point to be noted is that it was an infantry battle. And disciplined infantry was able to defeat the cavalry-elephant combination. The way in which the disciplined infantry opened its ranks reminds one of Alexander's Macedonian infantry's tactics against the elephant charge by Porus at Hydaspes. However, if Daulat Shah used several elephants, things might have been messy for the Ghorids. Stuffed hides for protection of the infantry continued to be used by the Yusufzai tribe of the Khaibar region even in the fifteenth century. It could be argued that the use of disciplined infantry constituted one of the long-term legacies of Ghorid war making. After the above-mentioned battle, Bahram Shah escaped to Ghazni and raised a levy of infantry. Ala-ud-din pursued him to Ghazni and defeated the ruler of Ghazni.[57] We could speculate that, in fighting among the confines of mountainous defiles, infantry was more suited than cavalry, and Ghorid infantry was more disciplined that the recently raised Ghaznavid footmen. In the eleventh century CE, Song infantry was equipped with crossbows, heavy shields, spears, lots of axes and long-bladed swords.[58]

By 1149, the Ghorids had captured Ghazni. Unlike Mahmud Ghazni, Mahmud Ghori's (also known as Muizuddin/Sihabuddin, r. 1173–1206) objective was not merely to plunder but to annex North India to his expanding realm. At that time, among the Rajputs, the Chauhan clan was the dominant one. The Chauhans under Arnoraj had the ambition of checking the Ghorids on the banks of the Saraswati river and capturing Haryana. When Mahmud Ghori turned his attention towards India, Prithviraj III (also known as Rai Pithaura) was the Chauhan ruler. Prithviraj's sway extended from Thaneshwar in the north up to Mewar in the south. Prithviraj was not only a brave warrior but also a supporter of arts and literature. One of his court poets, Jayanaka, composed the *Prithvirajvijayamahakavya* which gives the story of the Rajput–Ghorid confrontation from the Rajput side. Internecine conflict among the various Rajput clans was partly responsible for the initial Ghorid success in India. In 1178, Mahmud Ghori invaded Gujarat. Prithviraj did not lift a finger to aid the fellow Rajput ruler. Nevertheless, the latter was able to defeat the Ghorid Army.[59]

In 1191, Mahmud Ghori confronted the Rajput Confederacy under Prithviraj Chauhan at the village of Tarain. It was on the bank of the River Sarsuti (Saraswati?), 14 miles from Thaneshwar and about 80 miles from Delhi. The battle in history was known as the First Battle of Tarain. In this battle, Mahmud Ghori experienced a hair's-breadth escape. The numerically superior Rajput force made a frontal attack and pushed the Islamic cavaliers back. Mahmud Ghori was leading 'from the front'.[60] One medieval Muslim chronicler Abdullah Sirhindi writes:

> When the Sultan saw this, he spurred on his charger against Govind Rai, the ruler of Delhi and the brother of Pithor Rai, and who was mounted on an elephant, which was always in the front line of the army, and smote him on the face thereby breaking the teeth of the accursed chief. The Rai, in return, struck the Sultan on the arm with his lance and wounded him. The sultan was about to slip out of his stirrup when a dexterous Khalji foot soldier immediately mounted behind him and supporting him in his arms rode hard out of the battlefield.[61]

The point to be noted is that disciplined Afghan infantry played an important role in the First Battle of Tarain. Mahmud Ghori retreated through Multan, Uchch to Ghazni. Prithviraj with his victorious host moved against the fort of Tabarindh, which was held by one of Mahmud's lieutenants named Ziauddin Tulaki, who commanded a 1,200 strong garrison. The Rajputs lacked siege engines so they surrounded the fort. The only technique of siege warfare in which the Rajputs were adept was to use elephants in frontal assaults in order to break the gates of the fort. At that time, Mahmud Ghori was engaged in rebuilding his army and also had to undertake an expedition against Khorasan. So, he could not come immediately to save Tulaki. Thus, we see the interconnections between Central Asian power-politics and the flow of

Islamic tide in India. After 13 months, due to lack of food for the garrison and fodder for the animals, Tulaki negotiated with the Rajput besieging force and evacuated the fort.[62]

The next year, Mahmud Ghori came back with a bigger force. Abdullah Sirhindi notes that the total strength of Ghori's army was 120,000 cavalry (both armoured and light), which included Turks, Tajiks and Afghans. This figure is suspect. It probably refers to both the combatants and non-combatants of the Ghorid Army. Or this figure probably represented the total theoretical strength of the soldiers which could be mobilized by the Ghorid Sultan. Ghorid diplomacy was at work, which undermined the Rajput Confederacy. Bijoy Dev, the Raja of Jammu, aided Mahmud Ghori by sending a contingent of troops under his son. And Raja Jaichandra was angered because Prithviraj had abducted his daughter. So, Jaichandra's force under Narsingh Deo attacked Govind Rai and the latter fell in the ensuing battle. Jaichandra's turn would come later. In 1192, Ghori and Prithviraj confronted each other again at the battlefield of Tarain. This battle in history is known as the Second Battle of Tarain. Mahmud Ghori decided to surprise his enemy by emphasizing speed and sudden movement. He camped three *cos* from Tarain. The baggage, non-combatants and all paraphernalia were kept in the camp, and Mahmud advanced with 40,000 choice cavalry. Suddenly, he appeared before the Rajput force, which was surprised. We lack any detailed knowledge about the numerical strength of the Rajput force. Ferista claims that the Rajput host numbered 300,000 cavalry, infantry and 3,000 elephants. This must be the theoretical strength which could be mobilized by all the Rajput polities in India. And the Muslim chroniclers were in the habit of exaggerating the Hindu strength in order to heighten the glory of the victorious sultans. What we can conjecture is that the Rajput Army was numerically superior compared to the Ghorid Army. As a point of comparison, at Hattin in 1187, 20,000 troops of the Latin Kingdom of Jerusalem faced 30,000 Islamic soldiers. Speed and surprise unnerved the Rajputs. A stampede broke out among them. Prithviraj was captured while trying to escape on horseback and then executed.[63] Mahmud Ghori earlier had suffered defeat at the hands of the elephant-centric force of the Rajput ruler of Gujarat and Prithviraj (in the First Battle of Tarain). In the Second Battle of Tarain, besides relying on horse archers, Mahmud Ghori also introduced a new weapon system: triangular pieces of iron with three spikes. These caltrops were spread to prevent an elephant charge by the Rajputs. This MTR was successful in halting the frontal rush of the Rajput Army's elephant force.[64] However, this MTR died away as we do not hear of its use in any further battles. The horse archers were able to take care of the Hindu armies' war elephants.

At its height, the Ghorid Empire included Seistan, Afghanistan, modern Pakistan and Punjab and North India.[65] Qutubuddin Aibak (a *ghulam*) was Mahmud Ghori's principal lieutenant in India. The Delhi Sultanate was established by Aibak in 1206 (after Mahmud Ghori's death in 1205).[66] Aibak was initially bought from Turkestan, and the merchant took him to Nishapur.

He learnt archery and then the merchant sold him to Mahmud Ghori.[67] In 1194, Mahmud Ghori and Aibak with 50,000 cavalry marched towards Benaras. Aibak commanded the advance guard of the Ghorid Army. Raja Jaichandra of the Gahadavala Rajput clan ruling over modern eastern Uttar Pradesh advanced with his army. Jaichandra relied on his contingent of 300 war elephants. The two armies met at Chandawar near the River Jamuna between Etah and Kanauj. The Gahadavalas were able to hold the onslaught of the Ghorid Army but, when an arrow struck Jaichandra seated in the *howdah* of his elephant, he fell from his elephant and died. His army became confused and Aibak exploited the momentary confusion and routed the Rajput force. As a point of comparison, when a naptha thrower hit Dahir seated on his elephant, then also the Sind Army became confused and Kasim's cavalry charged at it. The Rajput ruler had to show himself to his force in order to strengthen the morale of his soldiers. So, he was a sitting target for an enemy marksman. And the death of a ruler resulted in confusion and disorder in his army which could be exploited by the enemy force. Victory in this battle resulted in the expansion of the Ghorid dominion up to Mungher in Bihar.[68]

The tenth-century Ottonian realm in Germany was covered with earthwork fortifications under the landed magnates.[69] In India, zamindars and semi-autonomous chieftains controlled a large number of earthen and stone fortifications and, using them as bases, occasionally challenged central and provincial governments. It would be wrong to argue that the Ghorid Army was mainly capable of conducting cavalry-centric warfare. In fact, the Ghorids had an effective infantry force for conducting siege warfare. This in turn enabled the Ghorid Sultan and his lieutenants to capture the fortified 'Hindu' centres of resistance. Minhaj-ud-Din explains the skill of the Ghorid infantry in the following words:

> The troops of Ghor have a method, in the practice of fighting on foot, of making a certain article of one fold of raw bullock hide, over both sides of which they lay cotton and over all draw figured coarse cotton cloth, after the form of a screen (or breast work), and the name of that article is *karwah*. When the foot soldiers of Ghor place this screen upon their shoulders, they are completely covered from head to foot by it; and, when they close their ranks, they appear like unto a wall, and no missile or arms can take any effect on it, on account of quantity of cotton cloth with which it is stuffed.[70]

In 1210 Aibak died due to injuries suffered as a result of falling from his horse while playing *chaugan* (polo).[71] Aibak was succeeded by Sultan Iltutmish (r. 1210–36). Iltutmish's successors were weak personalities. The next great ruler was Sultan Balban (r. 1266–87). Again, Balban's successors were weak. In June 1290, Jalal-ud-din Khalji established the Khalji Dynasty. On 20 July 1296, Jalal-ud-din was executed by his son in law Ala-ud-din who then ascended the throne.[72]

Ala-ud-din Khalji (r. 1296–4 January 1316) took steps to increase the size of his army. For a particular campaign, the sultan could detach a field force of 40,000 cavalry.[73] The total strength of Ala-ud-din's cavalry fluctuated between 300,000 and 400,000 horsemen.[74] In 1320, the Khalji Dynasty was replaced by the Tughluq Dynasty. The founder of the Tughluq Dynasty was Ghiyas-ud-din Tughluq (r. 1320–25). The Delhi Sultanate Army reached its maximum size under Muhammad bin Tughluq (r. 1325–51). The total force under his direct control and including all of his nobles came to about 900,000 cavalry.[75] For a particular expedition (for instance, the Qarachil Expedition), Muhammad bin Tughluq was able to concentrate 80,000 cavalry.[76] For conducting sieges, the sultans maintained Hindu infantry known as *paiks*.[77] Razia Sultana (Iltutmish's daughter) recruited Khokhars, Jats and Rajputs as early as 1240.[78] In 1206, during Chingiz Khan's (b. 1165-d. 18 August 1227) coronation, the Mongol Army numbered 95,000 men. In 1211, Chingiz Khan mobilized 110,000 men against the Chins of North China and Manchuria. Just to put things in perspective, it is worth noting that, in 1219, Chingiz Khan launched some 150,000 cavalry against the Khwarazam Empire. The Khwarazam ruler had some 300,000 troops. According to one author, under Mongke Khan (Great Khan from 1251–59), the Mongols had 1 million men under arms.[79] And before the Mongols, in 1161, Prince Hailing of the Jurchen Dynasty of North China raised a force numbering some 600,000 soldiers.[80] In contrast, the medieval armies of West Europe were miniscule. Between the eighth and fourteenth centuries, England's royal army seldom exceeded 10,000 infantry and cavalry. Rarely, a medieval West European army covered more than 1,000 yards when deployed for battle.[81] If we take into account the size of the Delhi Sultanate Army at its height, then it was definitely a remarkable feat, for a power in the pre-industrial age. How many polities of Eurasia (except China and the Mongol Empire at its height of power) were able to match the Delhi Sultanate's level of military manpower mobilization? If army size is taken as an index of Military Revolution, then it could be argued that Ala-ud-din Khalji and Muhammad bin Tughluq initiated a Military Revolution at least in the sphere of military manpower mobilization.

The combat effectiveness of the Delhi Sultanate's Army was indeed remarkable. Not only was the Sultanate Army able to contain the Mongols under Balban but, under Ala-ud-din Khalji and Muhammad bin Tughluq, the Mongol raiders were indeed defeated several times. In 1229, Ogedei became the Great Khan.[82] It is true that the internecine struggle among the Mongols after the disintegration of the unitary Mongol Empire on the death of Ogedei somewhat dissipated the Mongol military energy. Still, the Mongols remained a substantial military power. How many armies in the medieval world were able to contain the Mongol threat? *Mamluk* Egypt was able to defeat the Ilkhan Mongols of Persia several times. However, this was possible for ecological and political reasons. The Ilkhans were distracted due to continuous tussle with the Golden Horde of South Russia and the Chagatai Mongols of Central Asia. And the Golden Horde, through Caucasus,

provided war horses to the *Mamluk* Sultanate of Egypt. Further, the absence of grassland in Syria prevented the Ilkhans from concentrating several *tumens* (each comprised of between 10,000 and 50,000 horses) for moving to Egypt through the Gaza Valley.[83] The Delhi Sultanate's success against the Mongols was all the more striking because the Turkish nomads in the Sultanate's force equipped with composite bows and riding on Central Asian mounts had a distinct advantage over the Rajputs equipped with simple bows and mounted on inferior horses. However, the Mongol ponies and composite bows were equal to or even better than what the Delhi Sultanate could deploy. Each Mongol horse of some 13 or 14 hands in height, watered once a day and mostly fed on grass, had enormous stamina.[84] Let us analyse the Delhi-Sultanate Mongol interaction in some detail.

Pursuing the Khwarazam Crown Prince Jalal-ud-din Mangabarni, Chingiz Khan with his army came to the Indus. Chingiz defeated the Ighraki tribesmen who inhabited the northern reaches of the River Kabul, because they provided military contingents to the Khwarazam Empire. Chingiz was thinking of moving into South China through North and East India. In 1222, history's greatest warlord marched back from the Hindu Kush Mountain never to return to this region again. It is one of history's greats 'ifs and buts' about what would have happened if Chingiz decided to invade India. With all certainty, the Delhi Sultanate under Iltutmish would have collapsed like a house of cards. In 1224, a Mongol detachment under Turtai advanced to Multan but retreated due to excessive heat after plundering the tract between Lahore and Multan.[85] After Chingiz's death, the Mongols repeatedly launched expeditionary armies against the Delhi Sultanate. By then, the Mongols were growing weaker and the Delhi Sultanate was becoming stronger.

The Delhi Sultanate's twin strategy for containing the Mongol threat was comprised of maintaining a field army which could confront the Mongols once they crossed the River Indus and also construction of fortifications. During the reigns of Balban and Ala-ud-din Khalji, the Sultanate constructed a chain of forts across the Mongol route which lay through Dipalpur, Multan and Samana. The garrisons in these forts checked the Mongols till the field army from Delhi arrived to relieve them.[86]

In 1260, Sultan Balban maintained 50,000 cavalry and 200,000 infantry. Hulegu's (the Ilkhanid Mongol ruler of Persia) envoys in Delhi were impressed by the size of the Delhi Sultanate Army. The field army which the Delhi Sultanate managed to deploy against the Mongols in the first half of the 1290s numbered 17,000 to 18,000 cavalry. In 1291, Qaidu's son Sarban and one of Dawa/Dua's chieftains were stationed south of Oxus. Under Qaidu's aegis, Dua gathered together the Chaghatai forces. Sarban was in overall charge of five *tumens*. Of these five, three belonged to Qaidu's force and two belonged to Dua.[87] In 1296, Targhi entered India with 20,000 cavalry and advanced to Baran. But he lacked siege engines to take the fort of Baran and then had to beat a retreat.[88] In 1299, Qutlugh Khwaja, the son of Dua Khan of Transoxiana, invaded India. The Mongol Army encamped six miles away

from Delhi. The battle occurred at Kili. Ala-ud-din commanded the centre. Zafar Khan was in charge of the right wing and Nusrat Khan commanded the left wing. Ulugh Khan with a reserve was stationed behind Nusrat. Akat Khan's contingent comprised the vanguard of the Sultanate Army. Qutlugh Khwaja commanded the Mongol centre, Hijlak the left wing and Tamar Burgha the right wing. Targhi with a *tumen* constituted the reserve. Zafar Khan attacked Hijlak, who conducted a tactical retreat. As Zafar advanced towards Hijlak, Targhi's reserve *tumen* attacked Zafar Khan from the rear. Zafar's contingent was wiped out to a man but in the process the Mongols suffered some 5,000 casualties. Technically, the Mongols emerged victorious but the tough fight given by a section of the Sultanate Army weakened their resolve. Two days after this battle, Qutlugh retreated. Knowing the Mongol proficiency for retreat and counter-attack, Ala-ud-din did not pursue them.[89] Meanwhile, the Chagatai and the Ilkhanid Mongols fought with each other over Herat. Herat located in the southern Khorasan was the chief mart for commerce between India and Persia. In 1301, Qutlugh Khwaja's one *tumen* ravaged Fars and Kirman and went as far as Hormuz. During 1302–03, Sarban attempted to link up with Qutlugh Khwaja's force in order to launch a joint attack on Khorasan. The Chagatai Mongols thought that they had a chance of gaining success because the Ilkhan Gazan was engaged in Syria. However, the Central Asian Mongol forces were defeated by Gazan's brother Kharbanda, the Governor of Khorasan.[90] In 1305, Ali Beg and Tartak advanced up to Amroha and the Siwalik Hills with 40,000 cavalry. Malik Nayak/Naik (a Hindu convert to Islam) commanded the 30,000 strong Sultanate force. On 20 December 1305, the two forces fought at Amroha. The Mongols lost some 20,000 horses in the encounter. Nayak emerged victorious in this battle and the two Mongol leaders were captured and executed.[91]

In 1320, the Mongol leader Dalucha, who was a senior officer of the Chagatai Mongol branch with some 70,000 cavalry, advanced from Khwarazam and then through Turkestan entered the Kashmir Valley. The ruler Sahadeva escaped to Kishtwar and the Commander-in-Chief of the Kashmir Army Ram Chand shut himself up at the Ganganir Fort. The Mongols after plundering and capturing men and women withdrew. The captured civilians were sold as slaves in Turkestan. Dalucha remained in Kashmir for about eight months. However, the onset of winter and spread of famine forced Dalucha to move. Dalucha decided to move to Delhi through the Banihal Pass. As he was moving through the pass, a snowstorm overwhelmed his force.[92] The Mongols, probably finding Punjab heavily defended by the Delhi Sultanate, attempted to break into the fertile Ganga Valley through Kashmir. But, the mountainous terrain of Kashmir was not suitable for the operation of large numbers of cavalry. Further, the soil of Kashmir was not fertile enough to sustain a large force for a long period.

In order to maintain the huge army required for checking the Mongols, the Delhi Sultans had two options. One was to launch repeated raids against the remaining Hindu realms in Central and South India and to plunder them.

Fighting the 'infidels' also increased the aura of the sultans and legitimized the authority of the 'Islamic' Sultanate. And second, the sultans reorganized the administrative fabric to exploit financial, animal and manpower resources in larger quantities in order to maintain their gargantuan military establishment.

Under Ala-ud-din Khalji, Ranthambhor was ruled by a descendant of Prithviraj Chauhan. Ulugh Khan and Nusrat Khan were ordered to seize Ranthambhor. In 1299, as they besieged the fort, they found out that the Rajputs were hurling stones at the besieging army from siege engines in the citadel.[93] The *manjaniqs* which the Arabs had introduced in Sind in the eighth century CE gradually percolated and spread among the Hindu rulers. The eastern frontier of Sind and the western frontier of Rajputana were coterminous. By the thirteenth century, the asymmetry between the besiegers and the besieged vanished. In other words, the technical advantage which the Arabs enjoyed over the Hindus in Sind in the sphere of siege warfare during the eighth century CE vanished during the Delhi Sultanate. Thus, under the Delhi Sultanate, sieges became protracted and the sultans had to mobilize large armies in order to blockade the forts. And because of the seeming impregnability of the forts, when the central government at Delhi got distracted either due to civil war or the Mongol invasions, both Hindu chieftains and Muslim nobles from their forts raised the standard of rebellion. Only with the coming of gunpowder artillery in the late sixteenth century would the military balance swing against the besieged.

However, the Delhi Sultanate Army especially under Ala-ud-din was successful in field battles against the Hindu polities south of the River Narmada. This was because the Hindu force structure had no effective counter to the Muslim steppe nomadic horse archery. The Hoysala Army could be taken as a microcosm of the force structure of the Hindu polities in Deccan and South India. The infantry carried bamboo bows, swords, spears and shields. While some shields were circular with convex surfaces, others were rectangular and polygonal. By the thirteenth century, the shields became bigger for protection against long-distance archery. The cavalry men carried one-handed as well as heavy two-handed lances. The cavalrymen had leather stirrups and the saddle was built up with a high pommel and cantle. Like the Rajputs and the medieval knights of West Europe, the Hoysala cavalrymen were lancers. During the second half of the thirteenth century, horseshoeing begun in South India. The Kalachuris during the twelfth century and the Hoysalas imported war horses from Arabia. Towards the end of the twelfth century, the Hoysala Army numbered 20,000 infantry and 16,000 cavalry.[94] However, the Hoysalas lacked horse archers and their imported Arabian mounts were worse than the Central Asian mounts in speed and stamina.

The principal income of the state remained land revenue. About 50 per cent of the gross produce was extracted as the state's share. The Hindu village headmen (*chaudhuris*) and village accountant (*patwaris*) played an important role in collecting the land revenue. The pastoral communities had to pay grazing fees for their cows and buffaloes.[95] The most fertile regions were

Awadh, Bengal, Daulatabad (the region around Dhar and Ujjain). Another source of income was customs duties. Under Muhammad bin Tughluq, the taxes from the ports of Lower Indus like Lahari came to about 600,000 silver *tankas* per annum. While, in the 1360s, the Ganga-Jamuna Doab (the most fertile region of North India) yielded an annual revenue of 8 million *tankas*, the revenue demand of Gujarat was 20 million *tankas*. Gujarat's ports were the main centres for India's overseas commerce with China and the Mediterranean, East Africa and the West Asian regions. Gujarat manufactured fine cotton clothes which were exported to China.[96] Rashid ud din in his historical account completed in 1310 notes that sugar from Malwa was exported through the ports of Gujarat to various overseas markets. He further writes that Gujarat had 80,000 prosperous cities, villages and hamlets.[97]

In order to maintain a large army, Ala-ud-din Khalji fixed the prices of the essential goods in the vicinity of Delhi, where the bulk of the army was stationed. The prices of wheat, gram, barley, rice and pulses, along with cotton and silk clothes were fixed by the government agents. An inspector of market was appointed, whose duty was to see that all the transactions occurred within the rates fixed by the government. Grain dealers were issued government bonds (securities) and encouraged to establish themselves on the bank of the River Jamuna, so that they could bring grain from different parts of North India and sell it at Delhi at the government rates. The tax collectors were ordered to prevent the peasants from hoarding the grain and thus causing an artificial price rise. Due to emerging monetization of the economy, the peasants were also encouraged to sell their produce in the market. In order to tide the population over drought and famines, large granaries were established where the grain grown in the crown land (under direct control of the sultan) was stored. During emergencies, grain from these stores was provided to the needy in accordance with the number of persons in the family. Finally, spies reported the working of the market to the sultan. The working of the market system required not only an expansion of bureaucracy but also lot of paperwork. In the registers, names of merchants were maintained. Further, details of loans advanced to dealers for bringing clothes and grain from the producers to the markets were also recorded.[98]

The Delhi Sultanate under Ala-ud-din Khalji maintained strong control over the supply of war horses. The horses were classified into four categories and prices were fixed for each category. The horse dealers and brokers were ordered to sell the horses only to the government. If any person infringed these rules, they were severely punished.[99] Thus, we see that a strong interventionist state with a 'limited command economy' emerged under the Khaljis due to pressure from Mongol invasions.

The principal minister was the *vazir* or *wazir*.[100] The *arz-i-mamlik* was in charge of the Ministry of War. His duty was to maintain the royal army in a state of efficiency. He was in charge of recruitment, disbursement of salaries, training, holding periodic reviews and inspection (*arz*) of the horses and the men. For supervizing the maintenance of the war elephants, a superintendent

known as *shahnah-i-pilan* was appointed. The sultans' aides-de-camp were the *hajibs*. Several *hajibs* accompanied the sultan during a military expedition. The office of *diwan* audited the income and expenditure of the various branches of the government. A selected contingent of soldiers known as *jandars* constituted the sultan's bodyguard. Every sultan had *ghulams* who constituted the royal army and they also filled important administrative posts. While Ala-ud-din Khalji had 50,000 *ghulams*, Sultan Firuz Shah (r. 1351–88) maintained 180,000 *ghulams*.[101]

A comparison may be made between the Delhi Sultanate and *Mamluk* Egypt's military forces. The Royal *Mamluks* comprised the backbone of the Egyptian Army. The same was the case for the Delhi Sultanate Army. The Royal *Mamluks* were the *mamluks* of the ruling sultan and those *mamluks* who entered the service of the reigning sultan from other masters (*amirs* and previous sultans). Those *mamluks* who passed from the service of the *amirs* to that of the sultan because of the death of their masters or dismissals were known as *sayfiya*. Under the Bahri period, the Royal *Mamluks* in Egypt numbered some 10,000 to 12,000 troopers. After the Royal *Mamluks* came the *mamluks* under the various *amirs*. The non-*mamluk* cavalry in Egypt was known as troops of the *halqa* (corps of freedmen). The equivalent of *halqa* in the Delhi Sultanate was the mercenary cavalry raised during expeditions and other emergencies. In Egypt, as in India, the Royal *Mamluks* were paid by *iqtas*.[102]

The powerful Delhi Sultans emphasized military training. Balban initiated annual winter hunting expeditions. It was similar to the Mongol hunt in which the wild animals were enclosed within a vast but contracting circle. Such a hunt provided training for military manoeuvers and archery skills of the troops. A region in Katehar in Rohilkhand was reserved for military training. Further, frequent campaigns against the Hindu potentates also kept the Delhi Sultanate Army at a high level of activity.[103] The recruits were tested by the *diwan-i-arz* in archery and only those who passed the test were recruited. The *ghazis* were tested in horsemanship before being enlisted in the army. Several *ghulams* were trained as elite troops who conducted commando-style attacks.[104]

It could be argued that the Delhi Sultanate initiated a managerial transformation. In fact, most of the administrative structures of the sultanate mutated and remained operational in one form or other under the Mughal Empire. Under Ala-ud-din, the horsemen were paid in cash. Heavy armoured horsemen with two mounts were paid a higher cash salary compared to an unarmoured horsemen with a single mount.[105] However, Ala-ud-din's experiment with a cash salary did not outlive his death, like that of Sher Shah who also tried a similar experiment in the sixteenth century. The administrative fabric of the Delhi Sultanate was the product of Turko-Mongol-Persian traditions laced with some Hindu practices. The *iqta* system became the crucial lynchpin of the Delhi Sultanate especially as regards recruiting and maintaining the cavalry force. The big *iqta* holders were also provincial governors

and they maintained cavalry contingents for maintaining law and order in their provinces and also provided troops to the central government in times of crisis.[106] Most of the Sultanate troops were paid with *iqta* land grants. Balban issued land assignments in and around Delhi. In the long run such land grants gave rise to local attachments and finally regional rebellions when the central government became weak.[107] The *iqtas* remained functional in India from the ninth century to the fifteenth century when they were transformed into *jagir/ mansab*. Under the Mughals, the *ghulams* were replaced by *mansabdari* system. But, the office of *wazir*, *diwan*, the practice of review of the cavalry horses and cavaliers, etc. continued to operate in the Mughal Empire. So, it could be said that the Delhi Sultanate initiated a bureaucratic transformation as part of the Military Transformation in the medieval era.

We have seen that the Delhi Sultanate Army was capable of manoeuvering in the battlefield. However, we do not have evidence as to whether there were permanent divisions and subdivisions for tactical and administrative functions. Probably, during battle, the Sultanate Army went for *ad hoc* grouping. In contrast, the Song Army during the Tangut War was grouped into units of 500, 2,500 to 4,000 men and even in units of 10,000 men on a permanent basis.[108] Neither the *Mamluk* Sultanate of Egypt-Syria (1250–1517) nor the Delhi Sultanate had any institutions for training the officers. The *mamluks* rose from the rank of ordinary soldiers depending on their military skill and political connections without undergoing any special kind of training in leadership.[109]

Several historians dealing with military developments of pre-modern western Eurasia claim that fourteenth-century West Europe especially during the Hundred Years War (1337–1453) experienced an Infantry Revolution. While some go for a technology-driven explanation to account for the Infantry Revolution, others note that accompanying social and economic changes in West Europe enabled the Infantry Revolution to unfold.[110] Whether the rise of infantry in Western Warfare during the Late Middle Ages can be conceptualized as a Revolution or not is debatable. But there is no denying that infantry did indeed play an important role in late medieval Western battles. For instance, on 11 July 1302, the Flemish foot soldiers defeated the mounted knights at Courtai. In 1314, at Bannockburn the Scottish foot soldiers defeated the Anglo-Norman knights of Edward II of England. In 1315, at Morgarten, the Swiss infantry defeated the Austrian knights. Numerous such examples could be given. In 1319, the peasant infantry of Dithmarschen defeated the knights of Holstein. As a point of comparison, in South Asia, as the preceding account has shown and as will be narrated below, that disciplined infantry in the battlefield was not absent. Nevertheless, the infantry in South Asia by themselves could not defeat the horse archers. The infantry in South Wales, equipped with bows, and infantry of North Wales, equipped with pikes,[111] would have been wiped out by the horse archers who were more nimble and had more firepower than the clumsy lumbering knights of medieval West Europe launching frontal charges. For all these reasons a powerful infantry tradition did not emerge in medieval South Asia. The infantry

branch remained a marginal one within the military establishment of the Delhi Sultanate. We have evidence that the Delhi Sultanate recruited *paiks* from Bengal who were skilled in archery. Besides bows, the *paiks* were also equipped with spears, swords and shields. The *paiks* engaged in wrestling and hunting as military exercises. The *paiks* were of great importance during siege operations. With hammers and spades they made breaches in the walls and also used ladders in scaling the walls of the forts. However, during open battles, the *paiks* played a subordinate role in guarding the military camps and protecting the elephants.[112] The key weapon system shaping the dynamics of battle remained the mounted archers. And concurrently, the absence of horse archers allowed West Europe to tinker with infantry formation from the fourteenth century onwards.

The decline and fall of the Delhi Sultanate

Firuz/Firoz Shah was the last great ruler of the Delhi Sultanate. However, the seeds of decline had been sown in his reign. Firuz attempted somewhat unsuccessfully to expand the frontiers of his realm by recapturing provinces like Bengal and Sind which were lost in the later part of Muhammad bin Tughluq's reign. Firuz and his nobles assembled 70,000 soldiers for conquering Bengal.[113] India and China failed to breed good horses. There were three sources of war horses for the medieval Indian rulers. One source was to import Central Asian war horses through Kabul. As a point of comparison, Song China also imported horses from the steppe regions on its northern boundary. However, the Delhi Sultanate had lost control over Afghanistan under Balban. Another source was to import Arabian horses through the ports in Deccan and South India. And the third source was to import horses from Tibet to Kamrup and then to North Bengal.[114] This explains the attempt by the Delhi Sultans to bring Lakhnauti (Bengal) under control. Bengal was also important as a source of war elephants.[115]

Firuz advanced towards Jairan, the source of the Kosi river. The river was forded with the help of ropes tied to a long line of elephants. After the occupation of Pandua (in North Bengal), Firuz reached Ekdala on 1 April 1354 in pursuit of Haji Ilyas, the independent ruler of Bengal. Firuz's troops, by digging entrenchments and constructing batteries, started the siege of the fort. Minor skirmishes occurred between the besiegers and the besieged. Ilyas hoped that, due to rain and flood, Firuz's army would be forced to retreat.[116]

Firuz made a tactical retreat and left behind spies who deliberately gave themselves up to Ilyas's men. These spies recounted in details that the Delhi Sultanate's army was retreating in confusion. Ilyas decided to attack and finish off Firuz's retreating army. With this objective, Ilyas on 20 April 1354 came out of his fort. Meanwhile, Firuz turned back and advanced with his army. The army was divided into right, left and centre under Malik Dilan, Malik Hisam and Tatar Khan. Firuz remained in overall charge. The battle was fought in Malda District. While Firuz had some 30,000 cavalry, Haji Ilyas

deployed 10,000 cavalry and 50 elephants. Haji Ilyas opened the battle by attacking the Sultanate Army's left wing. In response, the Sultanate Army's right wing under Malik Dinal attacked Ilyas' army. Tatar Khan's central division poured reserves to the Delhi Sultanate Army's left and right wings. After shooting arrows, the soldiers of both sides closed with spears and swords. Ilyas's army was defeated but he escaped to the fort. However, not military victory, but climate and difficulties of maintaining communications over long distance shaped the dynamics of campaign. Firuz realized that, though Ilyas's power was broken, he could not campaign in Bengal far away from Delhi in the rainy season. On 21 May 1354, Firuz started his retreat and withdrew via Tirhut, Zafarbad and Kara Manikpur.[117]

In 1365, Firuz started preparation for the invasion of Sind (known as Thatta). He supplemented the regular standing army with a large number of irregular troopers. The latter received 40 per cent of their allowance as advance payment. In total, Firuz's invasion force numbered 90,000 cavalry and 480 elephants. The people of Sind constructed mud forts on both banks of the River Indus. Jam Jauna and Banbhina collected some 20,000 cavalry. From their bases in the mud forts, the force of these two chiefs conducted harassing attacks on the Delhi Sultanate Army. The Sultanate Army suffered from shortages of forage which incapacitated some three-quarters of Firuz's cavalry force. The Sultanate Army retreated to Gujarat.[118] These two campaigns showed that the Delhi Sultanate Army (which was based on cavalry, infantry and elephants) under Firuz Tughluq was unable to prevail against the regional kingdoms like Bengal and Sind.

Under Firuz, the size of the army shrunk to 90,000 horsemen. Of them, 40,000 were *ghulams*. The boundary of the Delhi Sultanate had contracted and the revenue base had also shrunk, which in turn explains the reduced size of the army. Firuz completely ruined the efficiency of the army by making the military posts hereditary. Regardless of merit, the son succeeded to his father's post. In the absence of a son, even the son-in-law succeeded to the post. Further, the *iqtas* also became hereditary under him. Firuz maintained a *pilkhana* (elephant establishment) and a *paigah* (official stud).[119] However, the *paigah*-bred horses were not as good as the Turki horses. And, for overdependence on elephants, as the battles against Timur and the First Battle of Panipat would prove, the Delhi Sultanate would pay heavily like the Hindusahis. On 20 September 1388, Firuz passed away. The size and training of the army further declined under Firuz's successor Sultan Muhammad Shah. He commanded 50,000 cavalry. Of them, about 20,000 were provided by various chiefs who were ready to change sides in accordance with political fortunes.[120]

The decline of the already weakened Delhi Sultanate was accelerated when *Amir* Timur (Timur the Lame or Tamerlane, b. 1336; d. 1405) burst upon the scene. In his autobiography, Timur accepts that both religious zeal and greed for gold and silver encouraged him to attack Hind.[121] Religious zeal was a questionable factor because the Delhi Sultanate was ruled by the Muslims. The ruler and the nobility were all Muslims. Timur unlike Mahmud Ghori

was not interested in annexing India, but like Mahmud of Ghazni aimed at plundering the riches of the subcontinent.

Timur mobilized 100,000 cavalry for his campaign in Hindustan. His soldiers were divided into *kushunats* (equivalent of regiments) of 800 to 1,200 cavaliers each.[122] Timur was aware of the principal defensive element in the Delhi Sultanate Army. He emphasizes in his memoirs:

> The ... defence consists of the elephants, for the rulers of that country in the day of battle equipping elephants in mail, put them in the van of their army, and place great confidence in them, and they have trained them to such a pitch that, lifting with their trunks a horse with his rider, and whirling him in the air, they will dash him on the ground.[123]

Due to Mongol occupation of the horse markets of Kabul and Herat, the Sultanate like its Rajput predecessors was depending on elephants and *paiks* rather than mounted archers. Moreover, like the thirteenth-century Chagatai Mongols, Timur being in control of Central Asia had access to better mounts and steppe nomadic warriors compared to the shrinking Delhi Sultanate. Worse, unlike the time of Ala-ud-din Khalji and Muhammad bin Tughluq, the Delhi Sultanate during Timur's invasion lacked the managerial and economic capacity to deploy large numbers of trained soldiers and war animals.

In 1396, Timur's grandson Pir Muhammad captured Uchch and Dipalpur. Multan held out for more than six months. In the summer of 1398, Timur with his grand army started his march from Transoxiana. Timur himself started his journey from his capital Samarkhand.[124] Timur's objective was to avoid lengthy sieges. However, Timur's army, if required, was capable of conducting siege warfare also. The Mongols used black naptha, which meant gunpowder. Timur knew the art of using gunpowder for mining the fort walls. A gunpowder mine was laid on the fort wall and set on fire. Timur reached the Pamirs and then advanced to Kabul. From this city, he marched to Bannu and crossed the Indus on 21 September 1398. Timur's army crossed the Indus over a bridge. It took only two days to construct the bridge with boats and three-legged trestles. Pir Muhammad and Timur joined forces near the River Beas. On 7 November 1398, Timur reached Bhatnir. Then, he moved to Kaithal (2 December) and on 11 December 1398 appeared before Delhi. The First Battle of Delhi occurred on 12 December. Mallu Iqbal advanced with 4,000 armoured cavalry, 5,000 infantry and 27 elephants. This army was a far cry from the army of Ala-ud-din which had stopped the Mongols a century earlier. After a brief skirmish, Mallu retreated.[125]

Timur was afraid that the Sultanate force might launch a sudden nocturnal attack against his camp. So, Timur took care to fortify his camp. The Second Battle of Delhi occurred on 18 December 1398. Sultan Mahmud Tughluq and Mallu came forward with 10,000 cavalry, 40,000 infantry and 125 war elephants covered with armour. The soldiers seated on the *howdahs* were

equipped with grenades and rockets.[126] We have an account of the Second Battle of Delhi by Timur himself:

> I placed the right wing under the command of Prince Pir Muhammad Jahangir. ... The left wing I put under the command of Prince Sultan Hussain. ... The advance guard I placed under Prince Rustam. ... I took my own place with the center. When all the forces were arrayed I ordered the advance guard to go forward and obtain some knowledge of the enemy. ... Sultan Mahmud had drawn up his army with the intention of fighting. His right wing was commanded by Muinuddin, Malik Hadi, and other officers. His left wing was under Taghi Khan, Mir Ali, and others. The sultan had taken up his own position with the center, and had appointed a body of troops to act as rear guard. ... I then gave orders for Ali Sultan Tawachi, Altun Bakshi, etc. to march with their regiments to strengthen the right wing. I also commanded the other officers to proceed with their men to the support of the vanguard.[127]

The battle started with the beating of drums. Battle cries were raised on both sides. A part of Timur's advance guard under Sanjak Bahadur and Sayyid Khwaja moved to the right and attacked the Delhi Sultanate's Army's advance guard from behind. In the initial charge, some 600 of the Sultanate advance guard died. We see that better manoeuvering capacity and superior leadership on the part of the senior officers of Timur resulted in the initiative being in the hands of the latter's army. The leaders of Timur's advance guard displayed what in nineteenth-century German military terminology came to be known as *Auftragstaktik* (mission-oriented command). Pir Muhammad on his own initiative seized the moment and attacked the left wing of the Delhi Sultanate Army. The mounted archers in Pir Muhammad's contingent proved decisive. Simultaneously, the left wing of Timur's army attacked the Sultanate right wing and pushed it back to the gates of Delhi. The Sultanate Army was able to make a frontal charge at Timur's centre, but the elephants were beaten back by showers of arrows. And then the wounded beasts were finished off by soldiers equipped with swords.[128] The Delhi Sultanate Army was beaten and retreated inside Delhi.

The defeat of the Delhi Sultanate Army against Timur must be placed within a broader context. One can question which power in Eurasia was able to defeat Timur? In fact, a glance of Timur's career between 1379 and 1402 shows victory after victory. Between 1387 and 1395, Timur repeatedly defeated the Golden Horde Mongols who were a terror for Muscovy and East Europe. Between 1400 and 1401, Timur defeated the *Mamluks* of Egypt. It must be noted that the Ilkhanid Mongols of Persia were defeated in Syria by the *Mamluks* of Egypt. And probably Timur's greatest victory was at Ankara in 1402 against the 'Thunderbolt' (Bayazid the Ottoman). This same Bayazid was able to defeat the Byzantine Empire repeatedly. And in the next century the Ottomans would destroy the *Mamluks* of Egypt and expand in South-East Europe, thus becoming a pre-modern Eurasian superpower. It would be erroneous to argue

that the Delhi Sultanate rulers were foolish and did not learn from history because they continued to use war elephants even in the fourteenth century. The issue is, what alternatives the Delhi Sultanate's strategic managers had at their disposal? The Mongols and later Timur had cut off the supply of horses and Turkish nomads from Central Asia and Afghanistan. Disciplined infantry of the Western style which was emerging in West Europe in the fourteenth century would have been decimated by the horse archers equipped with composite bows. In fact, Timur, like Mahmud of Ghazni, was also impressed with elephants. He himself used war elephants in 1400 against the Egyptian *Mamluks* at Aleppo.[129] If the war elephants were used in conjunction with other arms like mounted archers and infantry then this functioned as a potent weapon system at least till the advent of quick-firing field artillery in the late eighteenth century.

On 20 December 1398, Delhi surrendered to Timur. Timur stayed in Delhi for 15 days and then started his homeward journey. Between 26 January and 24 February 1399, Timur ravaged the territory between Haridwar and Jamuna. On 3 March 1399 Timur crossed the River Chenab and on 1 May reached Oxus.[130]

When Timur left, the defeated Delhi Sultanate's central government was challenged by its regional governors, who declared independence and took the title of sultan. Firuz's successor attempted to reassert control over the provinces. After the death of Mallu Iqbal Khan in November 1405, Sultan Mahmud left for Delhi at the invitation of the *maliks* in the city and left Kanauj in charge of Malik Mahmud Tarmati. During October–November 1406, Sultan Ibrahim Sharqi (r. 1401–40), the founder of Sharqi Sultanate in present-day Uttar Pradesh, marched against Kanauj. Sultan Mahmud advanced from Delhi. The two armies encamped on either side of the River Ganga. Ibrahim marched to Kanauj and laid siege to the fort. Turbati withstood the siege for four months and then surrendered. Ibrahim appointed Ikhtiyar Khan as Governor and garrisoned the fort. In October 1407, Sultan Ibrahim marched towards Delhi. Some of the nobles of Sultan Mahmud deserted their master and joined Ibrahim. When Ibrahim reached the banks of the River Jamuna, news reached him that Sultan Muzaffar of Gujarat was advancing towards Jaunpur. Ibrahim retreated and marched back to save Jaunpur. This allowed Sultan Mahmud to recover Sambhal and Baran.[131]

The Sayyid Dynasty was founded by Khizr Khan. His successor Mubarak Shah (r. 1421–33) made an unsuccessful attempt to reconquer Ganga-Jamuna Doab by attacking the Sharqi Sultanate of Jaunpur, but failed. During February–March 1427, near Mali Kotah and Chandawar, Mubarak waged an inconclusive campaign against Sultan Ibrahim of Jaunpur.[132] Under the Sayyids (1414–51) and the Lodhis (1451–1526), the royal standing army under the central government vanished. The Delhi Sultanate's army became a tribal militia.[133] Semi-independent Afghan chieftains provided ill-trained levies and these conglomerates lacked cohesiveness to face the 'face of battle'.

Conclusion

Our analysis shows that the quotation at the beginning of this chapter makes sense. The Turkish nomads who accepted Islam had the best mounts in the form of Central Asian horses. The Hindusahis of Kandahar depended on elephants since they lacked access to good quality horses and the sedentary society's soldiers were not as adept at riding horses as the nomads. And finally the demographic and economic resources of the subcontinent made possible the deployment of huge armies which were only rivalled by the size of armies maintained by the medieval Chinese polities. It could be argued that the Asian polities were able to mobilize quantitatively and qualitatively superior cavalry compared to the medieval European polities. Again, it would be simplistic to argue that the Central Asian Turks depended merely on cavalry. In fact, the Central Asian Turks and before them the early Arab-dominated Islamic armies also deployed disciplined infantry for battles and siege warfare. So, disciplined infantry was not an exclusive element of the 'unique' medieval Western war making as some historians dealing with West Europe would make us believe. Strategic culture changed with time. The Delhi Sultanate absorbed certain indigenous elements and fused them with certain institutions imported from Central Asia. Partly, the fusion was also a product of *realpolitik*. The Arabs initiated an RMA. However, disintegration of the Caliphate prevented the Arabs from reaping the full benefits of their military-technical superiority. The Ghaznavids initiated an RMA centred round cavalry warfare, and its full potential was exploited by the Ghorids. Initially, the Delhi Sultanate integrated the *mamluk* horse archers by granting *iqtas*. This resulted in a successful Military Transformation for the Sultanate. But, when the Mongols cut off the Delhi Sultanate from its supply of Central Asian horses and disciplined Afghan infantry, then the Sultanate was forced to absorb the Hindu elements of warfare (*paiks* and elephants) within their force structure. This force structure, which was the product of an altered Military Transformation initiated by the Delhi Sultanate, failed against Timur's pillaging raid. And, when another invasion for annexation was made by a Central Asian warlord, the subject of our next chapter, the Delhi Sultanate collapsed.

Notes

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5 Horses, guns and warfare in South Asia 1500–1740 CE

Introduction

The late medieval/early modern period of South Asian history discussed below witnessed the integration of gunpowder weapons with elephants, infantry and horse archery. This new compound of warfare initially came into existence in Deccan and later in North India. For several reasons, the Military Transformation under the Mughals in North India was more successful. Zahir-ud-din Muhammad Babur (b. 1483; d. 1530), the Turkish warlord of Central Asia, was the founder of the Mughal power in the subcontinent. At the age of 36, after almost two decades of fruitless struggle, he renounced the idea of regaining his ancestry in Central Asia and turned his attention towards Hind. After Babur's death, the Afghans challenged Mughal rule. Only with the advent of Babur's grandson Akbar, Mughal power was firmly established in India. By the early seventeenth century, the sprawling Mughal Empire was one of most powerful empires of the world. The Mughal Empire had more demographic resources than the Safavid and the Ottoman Empires. Only the Qing Empire had greater demographic resources compared to the Mughals. Structurally, the Mughal economy was stronger than that of the Safavids. The Mughal Army was able to vanquish the Rajputs and the Afghans within India. However, due to a combination of internal and external threats, and socio-economic changes, Mughal power started atrophying from the late seventeenth century. How and why the Mughal land forces were unable to tackle the Maratha attritional warfare and conventional threat posed by Nadir Shah of Persia at the beginning of the eighteenth century is discussed in this chapter.

Historians both old and new have dismissed Mughal warfare as a sort of bad joke. The British scholar William Irvine writing in the high noon of colonialism asserted that racial inferiority and lack of rationality prevented the Mughals in particular and the other Asiatic empires in general from constructing a bureaucratic army. Writing almost a hundred years later, two Dutch historians, Jos Gommans and Dirk Kolff claim that Mughal warfare was partly a 'theatre' based on a show of force. The objective of Mughal warfare, we are told, was not to destroy the enemy but to co-opt them. Irvine, Gommans and Kolff claim that the Mughal Army was incapable of fighting decisive

battles and conducting sieges. What had been racial deficiency in Irvine's framework has transformed into 'cultural uniqueness' in Gommans and Kolff's framework. Irvine wrote that racial superiority of the West Europeans enabled them to construct combat-effective bureaucratic armies geared for successful conclusion of warfare. In a somewhat similar vein, Gommans and Kolff claim that regimental discipline was at the root of capital-intensive, firepower-heavy infantry armies with which the Europeans were able to annihilate Asian armies.[1] Somewhat on a similar line, the American historian Douglas M. Streusand asserts that the aims of Mughal warfare were 'limited'. This in turn created a unique political entity in which the Mughal Emperors enjoyed 'limited' control over the surrounding countryside. The Mughals were not able to demilitarize the local lords but rather included them within their ever expanding imperial umbrella, thus creating a multilayered political culture.[2]

Culture, argue these scholars, prevented the Asians from integrating gunpowder weapons and creating drilled and disciplined infantry geared for complete destruction of the enemy force. In the last hundred years, racial superiority had been transformed into cultural superiority of the West Europeans. These authors do not chisel out what exactly constitutes the racial/cultural uniqueness of the West Europeans. Culture sometimes appears as a post-Renaissance 'black box' which needs to be unpacked. The discussion below will try to analyse the role of gunpowder weapons in Mughal warfare and contextualize the Mughal military with other late medieval and early modern Eurasian militaries. Now, let us look at the military innovations which occurred in the region south of the River Narmada at the beginning of the sixteenth century.

A RMA in Deccan

Firearm/gun means a weapon system that uses the explosive force of gunpowder to propel a projectile from a tube. Explosive gunpowder required the following mix: 75 per cent saltpetre, 15 per cent sulphur and 10 per cent charcoal.[3] Fifteenth-century Deccan witnessed the large-scale use of gunpowder weapons and not merely pyrotechnic devices in warfare. Probably, ancient India knew about pyrotechnic instruments. The *acharyas* in the ancient Hindu texts speaks of *agnichurna* (saltpetre). The Egyptians called it Chinese snow and the Arabs designated it as *barud*. Saltpetre (salt of rock) is known in Friar Bacon's work written before 1249. This is the first mention of saltpetre in West Europe. Charles Dana writes that Bacon was aware of the explosive character of gunpowder.[4] A Chinese alchemical text from 492 CE mentions saltpetre. The earliest known formula for gunpowder can be traced to a Chinese work which can be dated circa 800s.[5] The Hindu Classical texts speak of *agni bana* (probably fire/flaming arrows). The head of such an arrow had a coating of lead and tin, and the arrow was packed with some fibrous material which was ignited before being fired. The shaft of such arrow was made of iron and known as *naracha*. Such arrows being too heavy to be shot

from hand-held bamboo bows, the Hindus came up with machines for shooting them. Kautilya speaks of *maha yantra* (big machine) and its bigger version known as *Jamadagnya* which were placed at the walls of the forts for shooting such arrows.[6]

The Delhi Sultanate also used *bans* (hand-held rockets). In 1258, the Delhi Sultanate had some sort of pyrotechnical devices at its disposal. Under Sultan Jalal-ud-din Firoz Khalji (r. 1290–96), rockets (*hawais*) were used. Iqtidar Alam Khan writes that these were not traditional naptha-based devices but gunpowder-based pyrotechnics which were introduced into North India by the Mongols, who in turn acquired them from China. During the second half of the thirteenth century, the Mongols used several gunpowder-based weapons of Chinese origin. They were *huo pao* (a catapult throwing gunpowder-based explosives), *huo chiang* (bamboo rockets) and *pao chang* (gunpowder-based crackers). Iqtidar Alam Khan ignores the pre-Muslim indigenous origins of *bans*. He writes that, in 1300, the Rajput defenders of Ranthambhor used Mongol mercenaries against the Delhi Sultanate's besieging army. And the Mongol defenders introduced *bans* in Rajasthan. Iqtidar Alam Khan opines that gunpowder-based rockets travelled from North India, then under the Delhi Sultanate, to Deccan and became part of the Bahmani Sultanate's arsenal by 1366. According to him, the knowledge of gunpowder also came to Bengal through the Chinese ships which visited in 1419. Overland, the knowledge of gunpowder entered Bengal through Assam and South China. The introduction of *bans* comprised an MTR. However, the Indians did not merely copy this Chinese military innovation but modified it, and this increased its effectiveness. The bamboo container was replaced with an iron tube. The range of the Indian rocket came to about 1,000 yards (far greater than the contemporary musket). And the rockets were useful in frightening the horses and elephants.[7]

The word cannon comes from *canna* (Latin) which means cane or reed. Probably hollow reeds filled with Greek fire (naptha) were used. And these were attached to the end of the lances in order to frighten enemy horses. This was the West European version of *bans*.[8] The earliest guns probably emerged in the 1100s in China and in the 1200s spread to Manchuria.[9] According to Carlo M. Cipolla, cannons were used in Florence in 1326. In 1327, England had a very primitive gun. During the second half of the fourteenth century, the European gunmakers went for big guns. Hence, bombards came into existence. In 1382, at the siege of Oudenarde, monster cannons firing stone balls made their appearance. The wrought iron bombards were difficult to move and were reloaded very slowly. They were useful only in siege warfare. The casting of iron was introduced from Germany into France early in the fifteenth century. Cipolla makes a point that the European craftsmen were well acquainted with manufacturing bronze church bells. Hence, they were able to manufacture a cast bronze muzzle loading ordnance easily. Again, bronze was less susceptible to corrosion.[10]

The earliest hand-held firearms were the arquebus and the musket/matchlock. According to Kenneth Chase, the arquebus emerged in circa 1400 and the

musket around the 1500s. Compared to the arquebus, the musket was heavier and powerful and fired from a Y-shaped rest. Gradually, the muskets became lighter and were fired with two hands, with the stock being held against the shoulder to absorb the recoil charge. Till 1700, most of the muskets were matchlocks and were smoothbores. The matchlock was comprised of lock, stock and the barrel. The lock mechanism held a two-to-three-foot-long smouldering rope (the match). When the trigger was pulled, the match was lowered into the priming pan outside the barrel and ignited the priming powder. This in turn ignited the gunpowder inside the barrel, which propelled the bullet. The smoothbore muskets had no grooves inside the barrels. As a result, the spin which was imparted to the bullet on firing was random, which in turn made firing inaccurate.[11]

Richard Eaton in an article asserts that a Military Revolution occurred in early-sixteenth-century Deccan. Use of hand-held firearms, field and siege artillery shaped the dynamics of battles and sieges conducted by the Deccani sultanates and Vijayanagara. Gunpowder weapons came to Deccan from two different sources. In the first decade of the sixteenth century, the Ottoman mercenaries and deserters introduced the Ottoman-style gunpowder weapon systems in Gujarat. Later, the Portuguese brought firearms into Vijayanagara. The Portuguese tradition of gunmaking got fused with the Ottoman method of manufacture. And the net result was the emergence of hybrid gunpowder systems which were comparable in quality with the best weapons manufactured in Germany.[12] Cipolla notes that, in the last decade of the fifteenth and first decade of the sixteenth century, German and Flemish artillery (the second best in Europe) were exported to Portugal and Spain.[13] And, the muskets used by the Ottoman Turks, writes Jonathan Grant, had a longer range than those used by the Austrians at least till 1680.[14] Whatever may be the origin and exact trajectory of the introduction and development of gunpowder weapons, the Delhi Sultanate and the Vijayangara Empire, by integrating the hand-held firearms (muskets, rockets) and artillery with cavalry, infantry and elephants, generated a multidimensional RMA. The gunpowder weapons did not result in complete rejection of the traditional weapon systems among the polities of fifteenth-century Deccan. Rather, gunpowder weapons were integrated with the traditional military components, creating a complex military establishment. However, as we will see, the gunpowder weapons were not linked with the landed elements, cultural ethos and military systems (slave armies in the case of the Deccani Muslim sultanates). Hence, no Military Transformation occurred. Let us trace the trajectory of this process.

Towards the end of Muhammad bin Tughluq's reign, the Delhi Sultanate lost control over Deccan. South of Malwa, a rebellious Turkish governor named Hasan established the Bahmani Sultanate in 1347, with Daulatabad as capital. Most of the ruling elite of the Bahmani Sultanate were Central Asian Muslim warriors. Initially, the Bahmani Sultanate included the region between south of Malwa and north of the River Kishna, including western parts of Deccan. Further south, two Hindu chieftains named Harihara I (d. 1355) and

Bukka I Rai (who had accepted Islam and served the Delhi Sultanate during the 1330s) declared their independence. They reconverted into Hinduism and established the Vijayanagara Empire. The empire's capital city was also known as Vijayanagara (literally meaning city of victory; the city was also known as Hampi) on the southern bank of the River Tungabhadra. The two brothers established the Sangama Dynasty.[15]

From the very beginning, the Vijayanagara Empire was a sort of loose entity. Harihara I with his four brothers: Bukka I, Marappa, Mudappa and Kampa I, jointly ruled the empire. Among these five brothers, the premier ones were Harihara and Bukka. Between 1339 and 1346, Vijayanagara acquired Bangalore District from the Hoysalas. Vijayanagara found itself sandwiched between the Bahmani Sultanate in the north and Madura Sultanate in the south. In 1356, Bukka I came to the throne, and his son Kumara Kampana waged a campaign against the Madurai Sultanate.[16] By 1377, Vijayanagara was able to destroy the Madurai Sultanate.[17] The fertile Raichur Doab (alluvial zone of land between the Kirshna and Tungabhadra rivers) due to its economic wealth was the bone of contention between the Chalukyas and the Cholas. The same region also became the bone of contention between the Vijayanagara Empire and the Bahmani Sultanate. After the dissolution of the Bahmani Sultanate, its five successor states: Ahmadnagar, Berar, Bidar, Bijapur and Golkunda, fought Vijayanagara over this piece of land.[18] The conflict for Raichur Doab started in 1356 when the Bahmanis captured Raichur. In 1367, Bukka I (r. 1356–77) launched a counter-offensive. Vijayanagara and Bahmani Sultanate (and later its successors) also clashed over Krishna-Godavari Doab and over the Konkan Coast in the Maratha country. The Konkan is the narrow strip of land between the Western Ghats (Sahyadri Range) which runs along the western edge of the Deccan Peninsula, and the Arabian Sea was important because of the port of Goa, through which all the polities in Deccan and South India imported war horses.[19]

Burton Stein asserts that Vijayanagara was a 'conquest state'. It ruled over Tamil Nadu, Karnataka and Andhra Pradesh with the aid of Telegu and Kannada chiefs, whose ruling authority was based upon military service to Vijayanagara's kings. Each chieftain had a fortified stronghold. The border of the chieftains' territory fluctuated with time.[20] Foreign observers estimated Vijayanagara's force during the fifteenth century at somewhere between 300 elephants, 50,000 cavalry and 100,000 infantry at the minimum to 575 war elephants, 190,000 cavalry and 900,000 footmen at the maximum. The 190,000 cavalry probably meant the theoretical total number of horses that could be mobilized by the empire. And 900,000 footmen also included the non-combatants in the army. In general, Vijayanagara could deploy about 50,000 soldiers for a particular campaign.[21] Under Deva Raya II (r. 1425–46) the Vijayanagara Army comprised 80,000 cavalry and 200,000 infantry.[22] Comparison with China makes sense. In 1392, the Ming military establishment comprised 16,489 officers and 1,198,442 men, and the population of the empire varied from 65 to 85 million people.[23] One contemporary foreign

traveller noted that there were about 200 nobles in Vijayanagara and they had the right to maintain private forces. Some of the big nobles were actually 'small kings'. For example, in the late 1520s, one noble, Saluva Nayaka, maintained 3,000 cavalry and 300 war elephants. He himself collected revenue from the Tamil chiefs of his *jagir* and paid one-third of the net income to Vijayanagara's ruler.[24] Besides the private armies of the nobles, the Vijayanagara's ruler himself maintained a standing army.[25] Vijayanagara's rulers also issued *amaram* grants to the *nayaks* in South India. In return for such land grants, the *nayaks* were to maintain infantry and cavalry for Vijayanagara.[26] And, from the late fifteenth century, decentralization set in when the Vijayanagara rulers issued *nayamkara* grants. Villages, districts and even entire provinces were assigned to the ruling class. They had the right to collect taxes on land and on commerce and to maintain troops for the king. Two American scholars note that the *nayamkara* grant was influenced by the *iqta* grant and, if the chiefs failed to meet the military demands, Vijayanagara's ruler was able to revoke the *nayamkara* grant.[27]

Ahmadnagar and Bijapur maintained slave armies like the early Delhi Sultanate. The two Deccani polities to a great extent depended on Ethiopian slaves who were known as Habshis. One of the most famous Ethiopian slaves of Ahmadnagar was Malik Ambar (b. 1548; d. 1626). He was sold in the Red Sea port of Mocha. Then, he was taken to Baghdad and converted to Islam. From Baghdad he was taken along with other slaves in Arab *dhows* to Deccan, where Chengiz Khan (not to be confused with the Mongol ruler Chingiz Khan), the *Peshwa* of the Ahmadnagar Sultanate, bought him. Chengiz Khan himself was a slave. The Golkunda Sultanate enrolled Telugu warriors and Marathas who fielded light cavalry. These mercenaries were paid with land assignments.[28]

Vijayanagara's infantry were armed with sword and shield and wore no armour (probably due to the hot climate). Vijayanagara's infantry was not well equipped and well trained. Rather, Vijayanagara depended on the quantitative superiority of its infantry. In 1442, Vijayanagara's *pilkhana* was comprised of 1,000 elephants. The elephants were covered with armour. And when they were deployed in the battlefield, long swords like scythes were attached to their trunks.[29] Vijayanagara acquired elephants from the humid forested regions of Orissa. The Gajapatis was a Hindu dynasty which ruled South Orissa and parts of Andhra Pradesh from the 1430s.[30] Ensuring a supply of elephants was one of the reasons behind the Vijayanagara–Gajapati conflict.

The climate and terrain of South India are not suited for the breeding of horses. Vijayanagara used to import about 13,000 horses annually from Hormuz.[31] And the Hindus south of the River Narmada had no skill in horse archery. Till 1800, Central Asian horses and Turkish mounted archers shaped the dynamics of battle in the subcontinent. The rulers of Vijayanagara understood this issue. In 1430, Deva Raya II hired 10,000 Turks. These mercenaries were Iranian and Turkish Muslims settled in Deccan (the British later called them Deccani Muslims). About 2,000 Muslims were granted

jagirs and were asked to provide training in horse archery to the Hindu recruits. Some 200 Muslims joined the Vijayanagar Army's officer corps. In Deva Raya II's reign some 60,000 Hindus were trained in horse archery. In the 1530s, Rama Raya hired 3,000 Muslims from the Middle East in his army.[32] So, religion was not an issue as regards the use of military mercenaries.

Till the end of the fifteenth century, Arab traders controlled the horse trade. During the second half of the fifteenth century, the Bahmanis and Vijayanagara imported war horses from West Asia and the Middle East through the Arab merchants at Bhatkal Port.[33] However, in the early sixteenth century, the Arab traders were replaced by the Portuguese. In March 1510, the Portuguese Governor Afonso de Albuquerque captured Goa, the principal port of the Bahmani Sultanate on the West Coast of India. Bijapur used to import war horses from Arabia through this port.[34]

Vijayanagara, along with war horses, also imported gunpowder weapons.[35] An action–reaction dialectic drove the gunpowder weapons race south of the River Narmada. Iqtidar Alam Khan asserts that the Vijayanagara Empire acquired firearms in 1365 and the Bahmanis in 1368 from the Ottoman and Portuguese mercenaries and deserters. As early as 1472, the Bahmani engineers dug trenches and exploded mines during the siege of Belgaum Fort, then under Vijayanagara's control. Probably, this was the first time that mines were used in Deccan. Iqtidar Alam Khan speculates that Mahmud Gawan, commander of the Bahmani force, was a Persian, and the knowledge of trenches and mining came to Persia thanks to the Mongols who in turn brought it from China. In 1502, at Bhatkal, the Portuguese fleet was bombarded from the hilltop with artillery. In 1504, during the expedition to Khandesh, Sultan Ahmad Shah of Ahmadnagar had 5,000 infantry equipped with rockets and matchlocks. Ahmad Shah also defended the Chaul Port with artillery. In 1510, when the Portuguese attacked Goa, the Bijapuri garrison defended itself with artillery fire. The Bijapuris had 100 bombards and also a large amount of small artillery pieces. And the Bijapuris manufactured these pieces in their own arsenals at Goa before the Portuguese occupied this city. The Portuguese officials noted that the iron artillery pieces and matchlocks manufactured at the Bijapuri arsenal were comparable in quality with the gunpowder weapons manufactured in Bohemia.[36]

The prosperous economic base of these powers enabled them to maintain big state-of-the-art military establishments. The population of the Indian Peninsula south of the River Krishna during the first half of the sixteenth century was about 25 million.[37] As a point of comparison, at the beginning of the thirteenth century, there were only 2 million people in Mongolia.[38] This country's population did not increase significantly in the subsequent centuries. The capital city of Vijayanagara symbolized the economic prosperity of the kingdom. Contemporary foreign observers noted that Vijayanagara city was larger than Rome, which was then one of the biggest cities of the Western world.[39] The population of Vijayanagara city fluctuated between 300,000 to 400,000 people. The central city was 25 kilometres in size and the greater

metropolitan area covered some 650 square kilometres.[40] In fact, the standing force under Vijayanagara's Emperors was paid in cash.[41] Like most of the pre-modern political entities, land revenue was one of the principal sources of income for Vijayanagara. The deltas of Krishna, Goadavari and Kaveri were fertile. Bankapur in North-West Karnataka was a major pepper-producing and cattle-breeding centre. Cash crop (sugar, pepper, etc.) cultivation was encouraged by Vijayanagara's rulers. Moreover, tax concessions were offered in order to encourage the merchants, weavers, artisans, oil producers, etc. to set up markets and fairs.[42] All these encouraged internal trade. The polities south of Narmada also carried out brisk maritime overseas trade. While the Deccani sultanates exported cotton and silk, they imported slaves, ivory and gold from Ethiopia and horses from Arabia.[43]

On 19 May 1520, at the Battle of Raichur, Vijayanagara had 32,600 cavalry and 551 elephants (both war and baggage animals). The infantry was swollen by camp followers, merchants, etc. Ismail Adil Shah marched with 50,000 cavalry to recover Mudkul and Raichur forts which were captured by Vijayanagara's soldiers. The troops of Vijayanagara captured all the ferries over the River Krishna. Adil Shah, with 7,000 cavalry, crossed the river and waited for his engineers to prepare the bridges which would allow the rest of his army to follow him. Adil Shah's force also had 250 elephants. In fact, the sultan himself commanded from an elephant. The battle opened with some 30,000 soldiers of Vijayanagara making a frontal charge. Initially, Adil Shah could only deploy 2,000 men against this sudden charge by his enemy. However, matchlocks, *bans* and field artillery at the disposal of Adil Shah's force prevented Vijayanagara's numerically superior force from breaking through the hostile ranks.[44] In this battle, Vijayanagara had the upper hand but, after the next great confrontation, it ceased to exist.

On 5 January 1565, at the Battle of Talikota (also known as Raksha-Tangadi), the combined armies of the four Deccani sultanates defeated and destroyed the Vijayanagara Army. Rama Raja/Raya was the real power in Vijayanagara between 1543 and 1567. He stopped the import of West Asian horses. So, the Vijayanagara troopers equipped with sword and short spear were mounted on inferior country-bred ponies. In contrast, the four Deccani sultanates' cavalry was mounted on Arab steeds. Most of the cavalry was equipped with 16-feet-long spears. Thus, we see the evolution of lancers. Some of the cavalry also carried javelins for killing the *mahouts* of Vijayanagara's war elephants. Further, the Deccani sultanates' had a select mercenary corps of Persian troopers and Central Asian armoured horse archers. The latter had composite bows (the two horns of each bow were joined with a steel clasp). It goes without saying that the range and penetration effect of the composite bow was greater than the bamboo bow of the Hindu infantry. Rama Raja had a contingent of Muslim cavalry under six Muslim officers (Rohillas from Rohilkhand in North India) who had deserted the Deccani sultanates. Vijayanagara's light infantry was equipped with short spears and bamboo bows and wore no armour.[45] At Talikota, the Vijayanagara Army deployed 2,300 cannons and

hand-held firearms. Vijayanagara's artillery branch was officered by the Portuguese. Some of the gunners were also *mestizos* (offspring between Portuguese men and Indian women).[46] However, Vijayanagara lacked light and mobile field artillery. Hussain Nizam Shah the Sultan of Ahmadnagar had *gajnals* and *zamburaks* (both small field guns). In December 1564, the combined forces of the Deccani sultanates marched towards the north bank of Krishna. Rama Raja fortified the possible fords on the southern bank of the river with trenches filled with infantry supported by big immobile guns. The impetuous elephant and infantry assault of Vijayanagara was demolished by the Deccani sultanates' use of field artillery, firing a sort of primitive grape shot followed by harassing attacks by the horse archers. In this battle Rama Raja was captured and then executed. The victorious forces returned after plundering the Vijayanagara city[47]

The above account shows that the polities south of Narmada did not reject their traditional military branches in favour of gunpowder weapons. Nor did the introduction of gunpowder weapons result in radical restructuring of their administrative fabric. Both the Bahmani Sultanate (and its successor polities) and its opponent the Vijayanagara Empire initiated an RMA based on gunpowder weapons with cavalry, infantry and elephants. However, as we have seen, Vijayanagara's RMA was less efficient compared to that of the Deccani sultanates. This was partly because of the political decentralization of Vijayanagara's polity. However, it must be noted that the final defeat of Vijayanagara was also because of a diplomatic defeat on its part which involved the establishment of a joint alliance among the four Deccani Muslim polities. Talikota marked the end of Vijayanagara as a great power and certainly was one of the decisive battles in the history of South Asia. However, the four Deccani sultanates which had engineered an RMA were unable to survive in the long run against the Mughals who in North India during the first half of the sixteenth century generated a more efficient RMA. Moreover, the Mughals in the second half of the sixteenth century were able to integrate their RMA with the socio-economic structure that resulted in a Military Transformation. This in turn explains the longevity of the Mughal rule. Now, let us turn the spotlight on the rise of the Mughals.

Babur and the establishment of Mughal power in South Asia: 1519–31

From his mother's side, Babur had descended from the Mongols. And his father Omar Sheikh Mirza traced his lineage to the Turks (Timur).[48] On 10 June 1494, Babur at the age of 11 became the King of Ferghana after the death of his father. Ferghana (also known as Andijan) was an oasis located between the deserts of Khiva and Takla Makan.[49] On the east of Ferghana is Kasghar, and on the west is Samarkhand, and in the south lie the mountains at the border of Badakshan. The summer pastures in Ferghana were able to maintain some 3–4,000 mounted archers. Moreover, there were iron mines in

the mountains which aided the manufacture of weapons. The bows and arrows of the mounted archers were made from white poplar trees and they were known as Chachi bows. These bows were used by the Central Asian Mongols.[50] Soon after his father's death, Babur was driven out of his small kingdom by his greedy relatives.

By 1495–96, Babur's army comprised matchlockmen, catapults and mortars which discharged stone shots.[51] In May 1497, Babur appeared before the city of Samarkand but the Tajik inhabitants were indisposed towards him.[52] The important towns in Central Asia had citadels. Further, the towns were walled and also protected by mud circumvallation. Many forts had stone towers with turrets for defensive purposes. Some of the forts were protected with double walls. While besieging a fort, the attackers constructed *sar-kob*, which was a raised platform made of earth and wood. It was constructed near the wall of the fort. From this platform, the besiegers attacked the garrison stationed at the ramparts of the fort. The besieging army was also capable of constructing trenches in order to allow the assault parties to move forward towards the wall of the forts. Samarkhand was defended by Mahmud's son Baisanghar. The garrison was equipped with crossbows. As early as 1495, Babur had used mines against the forts.[53] Babur, after a siege of seven months, entered the city in November 1497, when Vasco Da Gama was approaching Calicut. In June 1499, Andijan and Kasan also came into Babur's fold.[54]

Babur inherited his father's taste for poetry.[55] And Babur was addicted to red wine.[56] Babur's drinking bouts were somewhat similar to those of Alexander. However, unlike Alexander, who at times raged even at his close friends and occasionally became physically violent, Babur displayed a charming personality with his boon companions. Babur's attempt to establish a Central Asian empire came to naught due to pressure exerted by the Uzbeks under their leader Shaibani Khan. So, Babur moved south into Afghanistan. By 1519, Babur established his control over Afghanistan. Around this time, Babur also acquired Ottoman-style matchlocks. These were improved versions than those which were in use in Central Asia in the 1490s. He occasionally levied contributions in cash from the tribal chiefs and the inhabitants. And the whole country was divided among his *beg*s as land assignments.[57] Babur's son Humayun recruited mounted archers from Badakshan. There was some attempt at bureaucratically administering the army. A notebook containing the names and records of the soldiers was kept.[58] Since the revenue from Afghanistan was inadequate to maintain himself against the Uzbeks in his northern frontier, Babur decided to move for safer and more fertile pasture. He turned his attention towards Hindustan. Again, the turbulent politics of Central Asia shaped the trajectory of South Asian history.

On 16 December 1525, Babur crossed the Indus and on 29 December reached Sialkot in West Punjab (now Pakistan's Punjab). Babur confronted the Lodhi Sultan Ibrahim at Panipat. Most of Babur's soldiers were Turks and Tajiks. Babur's own memoirs including most of the Mughal chroniclers claim that he had about 12,000 cavalry. Ibrahim's force was estimated at 100,000 cavalry

and 1,000 elephants.[59] The Mughal chroniclers, in glorifying Babur's victory at the Battle of First Panipat, suffered from the tendency to overestimate the size of the Afghan Army vis-à-vis the Mughal Army. The same tendency was also present in the various Classical scholars who dealt with Alexander's campaigns against the Persians and the Indians. The relatively small domain over which Ibrahim exercised power as well as the fractured politics of the Lodhi Sultanate certainly prevented Ibrahim from mobilizing 100,000 cavalry. Probably, 100,000 represented cavalry, infantry and non-combatants in the Afghan camp. As a point of comparison, in 1525, the Ottomans maintained 27,000 light *timariot* cavalry and 10,000 highly disciplined janissary infantry.[60]

The detailed ORBAT of the Mughal Army is available in Persian sources. Just before the First Battle of Panipat was fought, Babur issued orders to collect carriages. Some 700 carriages were collected. And Ustad Quli Khan was ordered to yoke them together in the Rum (Ottoman) manner with chains and ropes made of cow hide. Between every two carriages were placed six to seven gabions, in order to allow the matchlock men to fire their pieces from behind them. The right wing of the Mughal Army rested on the environs of the city of Panipat. The left wing was defended by the trees and ditches. And in front of the centre the carriages and gabions were placed. At the extreme end of right and left wings, two flanking parties comprising mounted archers were deployed.[61] Their duty was to implement the deadly *taulqama/tulughnama* charge against the two flanks and rear of the enemy force at the right opportunity. The Lodhi infantry, equipped with swords, were easy meat for the mobile mounted archers. Babur describes the Lodhi infantry as unskilled and unable to manoeuver in the battlefield.[62] At the end of the battle, Sultan Ibrahim's corpse was discovered among a heap of dead soldiers.[63]

Immediately after his victory at the Battle of First Panipat, Babur strengthened the loyalty of his *amirs* by distributing cash and precious stones looted from the Lodhi camp. In order to strengthen his regime, Babur followed the policy of political co-option of potential adversaries. He welcomed with open arms those chieftains who were willing to shift their loyalty from the Lodhi/Afghan cause to the Mughal banner. Some examples could be given. Firuz Khan received a *jagir* worth one crore *tankas* in Jaunpur (present-day Uttar Pradesh). And Shaikh Ghuran (a chieftain of Punjab) with 3,000 bowmen joined the Mughals.[64] The infantry bowmen were necessary for garrison duties and also for conducting sieges. Thus, we see, in the Indian context, the structure of the Mughal Army was changing from being primarily a force of mounted archers–matchlock men to one of mounted archers–matchlock men–bows-equipped infantry. This policy of co-opting the chieftains and their armed retainers into the Mughal fold as we will see later was followed much more systematically by Akbar.

Victory at First Panipat did not result in unchallenged Mughal control over North India. The Afghans were temporarily down and out, but the Rajputs were getting ready under their leader Rana Sanga (also known as Rana

Sangram Singh) to measure strength with the Mughals. Several Afghan chiefs like Hasan Khan of Alwar also joined Rana Sanga to defeat their common enemy: the Mughals. Rana Sanga was a veteran of many fights and was wounded several times. He was of middle stature, fair in complexion and with a well built body. While fighting the Lodhis, he had lost an eye and was wounded in one of his limbs. On 24 February 1527, Babur detached a mobile force to raid Mewat in order to prevent logistical supplies reaching the combined Rajput-Afghan camp. In order to strengthen the motivation of the Mughal soldiery, Babur raised the cry of *jihad*. He portrayed the forthcoming Mughal-Rajput struggle as a righteous religious war between the true Muslims and the pagans. In order to project the image of being a good Muslim, on 25 February 1527, Babur publicly gave up wine.[65] On 16 March 1527, Rana Sanga moved towards the village named Khanwa in Biana. The Mughal camp was located two *cos* away from the Rajput camp.[66] We are told that, while Rana Sanga had 80,000 cavalry, Babur had only 12,000 horsemen. Besides light cavalry (unarmoured mounted archers), Babur also deployed heavy cavalry: horses and sowars covered with mail armour.[67]

The Mughal ORBAT at Khanwa is described in detail by Babur in his memoir:

> Our front was defended by carts chained together, the space between each two, across which the chains stretched, being seven to eight yards. Mustafa Rumi had the carts made in the Rumi way. ... Mustafa was posted to the right in front of Humayun. Where the carts did not reach to ... spadesmen and miners were made to dig a ditch. ... Where there were no carts, by stretching ropes of raw hide on wooden tripods, set seven to eight yards apart.[68]

Behind the wheeled tripods, Ustad Quli deployed the infantry equipped with matchlocks. The whole battle line extended for one *cos*. Babur took position in the centre of his battle line. Humayun commanded the right wing.[69] Babur emphasizes in his autobiography: 'we imitated the *ghazis* of Rum by posting matchlock men and cannoneers along the line of carts which were chained to one another in front of us.'[70] Thus, we see that the Mughal ORBAT at Khanwa was similar to that of the Battle of First Panipat, and both battle plans were influenced by the Ottoman techniques.

At Chaldiran (1514) in Azerbaijan, the Ottoman Sultan Selim with 70,000 men (including 12,000 janissaries) confronted Shah Ismail's 20,000 cavalry. The hand-held-firearms-equipped Ottoman infantry, supported by field artillery, deployed behind its wagon laager. While the Safavid cavalry made a frontal charge, the janissary firepower from behind the wagons wiped them out. However, a caveat is necessary before we accept headlong the absolute superiority of gunpowder infantry. If Shah Ismail had launched a cavalry charge while the Ottoman infantry was in the process of deploying behind its wagon line, it would have been all over for Selim.[71] However, the First Battle

of Panipat was a bit different from Chaldiran. At Panipat, Babur had the awesome horse archers, unlike Selim. And Ibrahim Lodhi's Afghan cavalry in terms of horsemanship skill was inferior compared to Safavid cavalry. But, Ibrahim had elephants for making an awesome frontal charge, which Shah Ismail lacked. Rather than the First Battle of Panipat, the Battle of Khanwa had more similarities with Chaldiran. Both Rana Sangha/Sangram Singh and Shah Ismail made an impetuous frontal cavalry charge against the wagon laager-gunpowder infantry system and were wiped out.

Though numerically inferior, Babur's force had an edge both in hardware and in software (C3I). Not only did the huge host of Rana Sangram Singh lack artillery, matchlocks and mounted archers, but defective command also hampered them. The Rana lacked a disciplined body of troops under his direct command. Rather, the Rana's force was a collection of retainers of different chiefs who were suspicious of each other's motives. For instance, Siladin of Raisin commanded 30,000 cavalry, Udai Singh had 12,000 horses, Barmal had 4,000 cavalry, Narpat Hara had 7,000 horses, Bir Singh Deo had another 4,000 cavalry, etc. And during the battle, Siladin betrayed the Rana and joined Babur.[72] Unified command was absent in Rana's numerically superior force. Superior command, discipline, mobility and firepower gave victory to the Mughals.

The Mughals were able to capture the fortified centres in North India due to the technical edge they enjoyed in the field of siege warfare. Babur in his memoir describes in detail the manufacture of siege guns during October 1526:

> Ustad Ali Quli had been ordered to cast a large mortar for use against Biana and other forts which had not yet submitted. When all the furnaces and materials were ready ... we went to see the mortar cast. Round the mortar mould he had had eight furnaces made in which were the molten materials. From below each furnace a channel went direct to the mould. When he opened the furnace holes ... the molten metal poured like water through all these channels into the mould. ... The mould was left a day or two to cool; when it was opened, Ustad Ali Quli with great delight sent to say 'The stone chamber is without defect; to cast the powder compartment is easy.' He got the stone chamber out ... he busied himself with casting the powder compartment.[73]

During February 1527, Ustad Quli manufactured another stone-throwing mortar. Its range, Babur tells us in his memoir was 1,600 paces.[74]

It could be argued that Babur initiated an RMA by introducing two new weapon systems in North India: wagon laager and gunpowder weapons. Credit is due to him for effective battlefield use of gunpowder weapons (field artillery, especially stone-throwing mortars, along with hand-held firearms [matchlocks] and siege artillery) and for the introduction of the wagon laager system in North India. By fusing these weapon systems with traditional horse archery of the steppe nomads into one organic whole, Babur created a lethal

war-winning compound. It must be noted that the Deccani RMA lacked the wagon laager system. Nevertheless, it would be wrong to assume that Babur introduced a gunpowder warfare system, because mounted archery remained vital. Nevertheless, Babur's method of warfare allowed the Mughals to dominate the South Asian landscape till the beginning of the eighteenth century. However, when one crucial component of the system (i.e. mounted archery) was delinked from the Mughal system of warfare, then it was vulnerable to defeat. Further, as the struggle with Sher Shah will show, without mounted archery the much vaunted Mughal RMA, even with field artillery, was susceptible to defeats in the battlefield. Overall, Babur's vital inputs and the introduction of gunpowder-cavalry warfare in North India accelerated the slow process of Gunpowder-Horse Archery Military Transformation in South Asia which had started long before the advent of the Mughals. The Mughals after Babur and especially under Akbar continued the process of slow evolution of gunpowder weapons along with the other traditional arms and integrated them with the social and economic fabric. For instance, in 1529, the Afghans of Bengal used *bans* against Babur. Babur dismissed this weapon system. However, under Babur's successors, the *ban* was included within the Mughal force structure[75] as part of their inclusive process of Military Transformation.

The Suri challenge: 1533–56

Babur lacked time to consolidate his conquest in India. He passed away in 1530 when aged 48 years and was succeeded by his eldest son Humayun. The Afghans in East India and the Sultanate of Gujarat in South-West India posed threats to the newly established Mughal government in North India. Bahadur Shah of Gujarat provided refuge to many Lodhi nobles. Further, Bahadur Shah employed a Portuguese engineer and some Turkish gunners to build up his army, equipped with state-of-the-art gunpowder weapons.[76] Sultan Bahadur was a formidable opponent indeed. He had some 600 elephants and 100,000 cavalry.[77] Since Gujarat had some of the prime ports for importing horses from West Asia and the Middle East, the figure for cavalry in Gujarat's military establishment makes sense. However, it must be noted that the West Asian horses were inferior compared with the Central Asian horses in the military establishment of the Mughals. Further, Bahadur Shah of Gujarat, unlike the Mughals, did not have access to Turkish horse archers.

After conquering Gujarat, Humayun did not put this region under the central government. Rather, this region was subdivided among his half brothers and Mughal nobles as appanages. So, the central government did not gain any revenue. Gujarat's principal city Ahmedabad and the principal portion of the revenue were apportioned by Humayun's brother Askari.[78] In the absence of law of primogeniture and in accordance with the appanage system of the Timurids, the empire was divided among various sons. The members of the royal family, the *mirzas*, considered it natural to claim a sort of equality with Humayun. Mirza Sulaiman obtained Badakshan, and Kamran got Kabul and

Kandahar. Askari and Hindal got large tracts in North India. In 1531, Kamran drove away Humayun's governor of Punjab and appointed his own governor. Askari supported Kamran in this venture.[79] Thus, during the struggle with Sher Khan/Farid (b. 1486; d. May 1545) not long after, Humayun due to the treachery of Kamran was denied the use of Central Asian horse archers who entered the military labour market of South Asia through Afghanistan. So, technological superiority of the Mughals to a great extent was nullified by the fractious domestic politics inherent within the early Mughal polity.

Meanwhile, the Afghans were rallying under their energetic leader Sher Khan. However, it would be too simplistic to argue about a bipolar Mughal–Afghan clash. Sher Khan rose to power by defeating other Afghan sultanates and then challenged the nascent Mughal Empire. So, rather than kinship/race, power-politics was the dominant force shaping the dynamics of warfare in medieval India. Sher Khan's grandfather Ibrahim was a horse dealer from Narnaul. Ibrahim's son did not take to trade and commerce but entered the military profession. He served in the army of Raimal, a Hindu vassal ruler of the Mughals.[80] Sher served in Babur's army for some time (till February 1527) and accompanied the Mughal Emperor during his Chanderi expedition. Sher entered Babur's service for learning the methods of Mughal warfare. It is to be remembered that young Chandragupta Maurya also entered Alexander's army for a short period in order to understand the Greek method of warfare. In 1529, Sher left the Mughal service after serving Babur for 15 months.[81]

From Bihar, Sher marched towards Bengal. The Bengal Sultan sent Ibrahim Khan and Jalal Khan with a large number of elephants and artillery. In order to withstand artillery fire and the elephant charge, Sher resorted to construction of field fortifications in the battlefield. In October 1530, at Surajgarh, with 30,000 cavalry Sher Khan was able to defeat the Bengal Sultanate Army. The Farmuli clan played an important role in Sher Khan's victory. Sher Khan's cavalry made a tactical retreat which drew the Bengal Sultanate's cavalry from their artillery parks and the elephants. When the Bengal Sultanate's cavalry recklessly pursued Sher's cavalry, they were attacked from behind by Sher Khan's reserve cavalry and simultaneously the retreating Suri cavalry also turned round and attacked their pursuers.[82]

In 1533, Sher Khan issued a declaration that all able-bodied Afghans in Bihar should join his army for fighting the Mughals and resurrect the Afghan Empire. Those Afghans who refused to join the 'national' levy were liable to be executed.[83] In Indian history, this was the first and last time that any ruler gave a call for conscription. Before and after this proclamation, military service in South Asia had remained voluntary. It continues to be so. Besides Afghans, Sher Khan also tapped the Rajputs. Sher raised Rajput levies from Bhojpur in Bihar. During the first half of the nineteenth century, the British EIC also recruited these Rajputs who were known as *Purbiyas*. The Rajput contingent in Sher's army was commanded by Brahmajit Gaur, a Rajput zamindar from Mungher.[84] Between 1530 and 1537, Sher Khan's force had increased from a mere 6,000 cavalry to 70,000 cavalry. One managerial

innovation of Sher was that the sowars were paid regularly in cash. The monthly salary bill of Sher's army came to about 12 crore *tankas*.[85]

Witnessing the rise of Sher Khan in East India, Humayun left Gujarat and reached Mandu in Central India. Meanwhile, the Bengal Sultan, Mahmud Shah, asked for Portuguese assistance in order to deal with the rising threat of Sher Khan. Before the threats from east and west could coalesce, Sher acted. Sher Khan decided to move east and destroy the Bengal Sultanate before Humayun could arrive to help it. In October 1537 after the end of the rainy season, Sher Khan marched into Bengal.[86] Sher defeated the Bengal Sultan Mahmud. Meanwhile, Humayun advanced towards Sher in November 1537.[87]

Sher Khan confronted the Mughal Army of Humayun at Chausa which was a town on the bank of the Ganga river. The Afghan force of Sher Khan was divided into three divisions: one division was under Sher Khan, another was under his son Jalal Khan and the third one was under Khawas Khan.[88] In June 1539, Sher Khan (nicknamed fox for his cunning) launched a surprise attack on the Mughal camp and defeated Humayun's force.[89] In 1540, Humayun again marched with 100,000 cavalry (certainly an overestimated figure) against Sher Khan who assembled 50,000 soldiers. The two armies met at Kanauj on the bank of the Ganga. Humayun's force suffered from treachery, desertion and lack of adequate provisions. Humayun suffered some losses while crossing the river. Sher constructed earthen embankments as a sort of field fortification to protect his force. Sher divided his force into five divisions. Humayun commanded the centre. In his front, wagons linked with chains were placed and behind them light mortars and 21 heavy mortars were deployed. However, the Mughals were surrounded on three sides and pushed back to the river. Humayun's disposition of his force was faulty. He was fighting with his back to the river. As the Afghans entered the Mughal camp from the rear, all hell broke loose among the Mughal camp followers. In their panic and confusion while crossing the river they created disorder in the Mughal ranks. The Mughal Army was totally defeated. Humayun escaped to Persia through Afghanistan and Sher did not advance beyond the Indus.[90] The Battle of Kanauj was decided by the bold leadership of Sher and not by hardware.

Sher Khan, on becoming the ruler of Hindustan, took the title of Sher Shah and established the Suri Dynasty. At the height of his power, he disposed of 150,000 cavalry. Besides Afghan and Rajput cavaliers, Sher Shah also recruited mounted archers. For siege warfare, Sher manufactured mortars made of copper and hand grenades. The latter weapon was a legacy of the Delhi Sultanate. In total, he maintained 1,500,000 foot soldiers, who were mostly Hindus and recruited from Bihar and Bengal. The Mughals from Jahangir onwards also recruited Hindu infantry from Bihar. And the EIC recruited them in large numbers during the first half of the eighteenth century in the Bengal Army. The Suri infantry was of three types: *paiks* who were equipped with javelins, *dhalis* who were swordsmen and *banduqchis* (matchlockmen). Sher had 25,000 men equipped with muskets. The *paiks* were used by the Delhi Sultanate, and Sher realized the importance of *dhalis* during his

combat with the Afghan Sultanate of Bengal. And the importance of *banduqchis* became evident during his confrontations with the Mughals. There were 5,000 elephants in Sher Shah's military establishment.[91] Thus, we see Sher Shah attempted to integrate elements of the Mughal RMA (mounted archery and gunpowder weapons, but not the wagon laager system) within the traditional Delhi Sultanate's cavalry-elephantry-infantry structure. However, Sher's attempted Military Transformation failed due to his early death, incompetent successors and clan rivalry among the Afghans.

Sher died due to the bursting of a mortar during the siege of Kalinjar in 1545. He was succeeded by his son Islam Shah Suri. However, the centralizing trend of Sher Shah's administration was disrupted by the fractious politics of the various Afghan clans. When Islam Shah died in 1553, the Suri Sultanate, somewhat like the Carolingian Empire after Charlemagne's death, was divided into three separate sultanates: Punjab, Delhi-Agra and Bengal. Each of these sultanates was ruled by sons or relatives of Sher Shah.[92] Meanwhile, Humayun, with some military aid from the Persian monarch Shah Tahmasp I (b. 1514; r. 1524; d. 1576) was able to capture Kabul and Kandahar from his treacherous brothers. Humayun made a comeback from Afghanistan and easily occupied Punjab from the Suris. This was possible for several reasons. Sher Khan's RMA, which was based on two managerial innovations – cash payment for his soldiery and conscription of the Afghans of Bihar – could not be sustained by his successors because the Suri Sultanate failed to integrate these radical changes with the broader social and economic fabric. Further, these two innovative measures of Sher Khan faced opposition from the clan-based Afghans. The weak successors of Sher were not in a position to overwhelm the Afghan clan leaders who enjoyed local territorial loyalties. It must be noted that Ala-ud-din Khalji's attempt to pay the soldiers in cash also went into limbo after his death for the same reason. In addition, Humayun, due to his control over the horse markets in Afghanistan, had access to better Central Asian horses and mounted archers than the Suri potentates.

The breakdown of the Suri Sultanate facilitated the rise of Hemu. Hemu the Hindu General of the Suri Sultanate was born at Deoli (Deoti) in Alwar at Mewar/Mewat in Rajputana (present-day Rajasthan). Mewat was inhabited by the Mewatis and the Meos. Hemu's family belonged to the Dasas (a sub-group within the *baniyas*) who dealt in the saltpetre trade. So, these *baniyas* were in touch with the army personnel. Thus, Hemu came into contact with warriors and gunpowder weapons. After 1526, Hemu's family migrated from Narnaul to Rewari. Hemu was introduced to the Afghan Sultan Islam Shah Suri by a *modi* at Delhi. Islam Shah appointed Hemu as Superintendent of Market. Soon, by dint of his hard work, Hemu became the Minister in charge of Food and Supplies.[93]

By 1555, after defeating numerous Afghan chiefs like Ibrahim, Taj Karani, Rukn Khan Nuhani, Mubariz Khan, etc., Hemu became the strongest power broker of eastern India. Hemu's ascent also partly reflected the rise of the Hindus against Afghan-Mughal (Islamic) political dominance. However, there

was no clear-cut Hindu-Muslim divide as many Afghans fought on Hemu's side. In early 1556, Hemu with a large army (50,000 cavalry, 1,000 elephants – both war elephants and commissariat animals – 5,000 falconets and 51 cannons) moved towards Delhi. Since Hemu controlled Bihar and Bengal, he was able to raise such a large number of elephants. By this time, diffusion of gunpowder weapons had occurred from the Mughals to the Afghans. It is also possible that the Afghans of eastern India had acquired the knowledge of gunpowder due to the connection between Bengal and China. Thus, technologically, both Hemu's army and the Mughal Army were on the same plane. In fact, Hemu enjoyed quantitative superiority over the Mughals. The bulk of the Mughal Army at that time was in Kabul. The Mughal garrison in Delhi was then under Tardi Beg Khan. Tardi Beg ordered back the detachment under Ali Quli Shaibani which was engaged in fighting the Afghans at Sambhal. On 6 October 1556, Hemu reached Delhi. Many officers in Tardi Khan's army decided to wait for Mughal reinforcement from Kabul or at least for the detachment of Ali Quli. However, on 7 October 1556, Tardi Beg Khan somewhat rashly decided to give battle to Hemu. This resulted in the Third Battle of Delhi. The centre was commanded by Tardi Beg, the right wing was under Haidar Khan and the left wing was under Iskander Khan. Abdullah Uzbek commanded the Mughal vanguard. The Mughal vanguard drove away Hemu's vanguard and the right wing and pursued them. Hemu's army suffered some 3,000 casualties and the Mughals were able to capture 400 elephants. However, the Mughal vanguard in the course of pursuing the defeated enemy became separated from the Mughal centre. At that juncture, Hemu with his reserve force launched an elephant charge towards Tardi Khan. Tardi Khan escaped to fight another day. Hemu did not pursue the retreating Mughal Army[94] because he was afraid that the Mughal mounted archers following the tactical principle of 'Parthian shots' might launch a counter-attack. Thus, the Mughal Army was defeated but not destroyed.

Akbar's regent Bairam Khan executed Tardi Khan, who was a political rival to the former. Leaving a force under Khwaja Khan in Punjab, Bairam Khan with Akbar and the rump of the Mughal Army marched from Jalandhar to Karnal and then towards Delhi.[95] Under Bairam Khan's order, Iskander Khan Uzbek was given charge of the *harawal-i-manqula* (forward force/advanced guard). This detachment was comprised of elite units and moved in advance of the main body with the object of reconnaissance and harassing hostile forces. The *harawal-i-manqula* was a development of forward scouting parties which the Central Asian armies deployed in order to screen their advance and gather reconnaissance about the enemy army. In fact, Babur in his memoirs writes that, during 1496–97, he used a scouting party which was comprised of 200 to 300 selected men for the above-mentioned purpose.[96] Bairam Khan followed a more complicated ORBAT compared to Tardi Khan. The Mughal Army was divided into right and left wings, centre, vanguard, rear guard, reserve, *uqci* (contingent of archers positioned at both the flanks) and *altamash*. At the First Battle of Panipat, Babur had deployed *uqci*

at both his flanks. The *altamash* was a selected contingent placed between the vanguard and the centre. If the vanguard got separated from the centre (as happened in the Third Battle of Delhi), the *altamash* was to come to the aid of the centre.[97] Thus, we see the Mughals were learning from mistakes of the past and there were some sort of tactical-organizational innovations occurring in their army on the eve of Second Battle of Panipat.

Due to continuous warfare for the last two years in North India, there was famine. Scarcity of grain and fodder created problems for Hemu. Hemu could not keep his large force intact for a long time in front of Delhi due to logistical problems. Nor, due to famine conditions, could he withdraw deep into eastern India. So, he decided to give battle. It was a typical case of the physical environment dictating campaign strategy. Bairam Khan was also eager to try his luck in battle as quickly as possible since any delay would only worsen the Mughal position which was also assailed by other enemies. Mirza Sulaiman from Badakshan attacked Kabul with 10,000 cavalry and the Mughal commander Munim Khan was crying out for reinforcement.[98]

Hemu wanted to fight the advancing Mughals west of Delhi. While Hemu was with his main body which was moving slowly due to presence of a large number of elephants, he sent his artillery detachment under his officers Mubarak Khan and Bahadur Khan towards the town of Panipat (53 miles from Delhi). Hemu failed to anticipate the mobility of the Mughal Army. The Mughal forward force surprised Hemu's advanced detachment and captured the artillery park. Hemu's artillery was qualitatively and quantitatively superior compared to the Mughal artillery.[99] It shows how quickly technological diffusion occurred. Had his artillery park been intact, Hemu's victory was a certainty. Without his artillery establishment, Hemu still had a numerically superior army vis-à-vis-the Mughals.

As Hemu deployed his army, his elephants amazed Akbar's friend and historian Abul Fazl. Fazl was awestruck by these beasts just like Arrian was more than 1,000 years before. Fazl writes:

> Among them were 500 ... elephants. ... In might and courage they were exemplars. ... In truth each one of those famous elephants was capable of disordering a large force. They were especially calculated to confuse the ... cavalry, as the horses had never seen such terrific forms. ... They ruined lofty buildings by shaking them, and sportively uprooted strong trees. In the hour of battle ... they lifted up man and horse and flung them into the air. ... Musketeers and cross-bow men were placed on the mountain backs of those enormous elephants, which were furnished with suits of mail ... and defensive armour. ... All the elephants ... had their trunks armed with spears and knives.[100]

Besides the elephants, Hemu had 30,000 Rajput and Afghan cavalry.[101] The decisive battle was fought at Panipat on 5 November 1556 and in history is known as the Second Battle of Panipat.

The Second Battle of Panipat influenced the Mughal force structure. Akbar and later his successors decided to maintain a *pilkhana*. Till the mid-seventeenth century, the Mughals acquired elephants from the forests in the Gorakhpur region (eastern Uttar Pradesh). The forest tracts in Faizabad, Pali and Rudali in Uttar Pradesh were initially preserved for keeping herds of wild elephants. Later, these forests were cleared due to expansion of agricultural lands. The forested tracts of Bihar, Orissa and Malwa and parts of Gujarat were also home to wild elephants.[102] In Aurangzeb's time, the forest of Palamau in Bihar, Bengal and Assam supplied elephants.[103] From the time of Shah Jahan onwards, woodcutters and ploughmen accompanied the troops in order to clear the forests and construct roads for passage of the army. Ploughs were donated by the government.[104] Such activities also indirectly encouraged expansion of agriculture in the forested tracts and wasteland.

Mansabdars and political economy of the Mughal Empire

Jos Gommans writes that the period between 1500 and 1800 witnessed the rise of stable and powerful frontier empires of the Ottomans, Mughals and the Manchus. Influx of cash and bullion from the sedentary societies which these regimes controlled as well as access to Central Asian horses enabled these polities to project power over long distance. He categorizes these polities as post-nomadic trans-frontier states.[105] Andre Wink following this line claims that the Mughals were the last in the lines of post-nomadic empire builders in India. Such a polity mediated between the sedentary agrarian society of the subcontinent and pastoral semi-nomadic military entrepreneurs.[106]

The Mughal Empire, from a loosely organized appanage system, was transformed into a centralized agrarian bureaucratic empire due to Akbar's (r. 14 Feb. 1556–1605) administrative reforms. The core of Akbar's administrative reorganization was the *mansabdari* system which integrated the Mughal RMA with the social and economic fabric of the subcontinent, thus resulting in a Military Transformation. The *mansabdari* system transformed the semi-nomadic military entrepreneurs into quasi-bureaucratic officials in charge of ruling the sedentary society. In Wink's words, they became a sort of service nobility. Their activities were constrained by auditing and paper work done by the Hindu literate class employed by the Mughal Emperors.[107] Till 1730, the Akbari system with certain modifications continued to operate. A near contemporary of Akbar was Shah Abbas (r. 1588–1629), the monarch of Persia. Abbas somewhat reduced the tribal Qizilbash cavalry's power by recruiting Georgian, Circassian and Armenian troops equipped with firearms.[108]

One of the crucial lynchpins of the land revenue system in India was the zamindars. There were three types of zamindars: autonomous chieftains, intermediary zamindars and primary zamindars (rich peasants also known as *khud khasta*). The autonomous chieftains were called in the early medieval period *rais*, *ranas* and *rawats*. And the small Hindu intermediaries were called *khots*, *muqaddams* and *chaudhuris*. The land in the empire was divided into

khalisa and *jagirs*. The *jagirs* were assigned to the *mansabdars* for maintaining cavalry contingents and the *khalisa* (known as *mamlik* in the Safavid Empire) was supervised directly by the central government. The land revenue of the *khalisa* land went to the treasury of the central government. Both the *khalisa* and the *jagirs* had zamindars. The chieftains were hereditary autonomous rulers of particular tracts and enjoyed sovereign power. Many chieftains were absorbed into the Mughal ruling class by granting them *mansabdari* ranks. With the award of *mansabdari* rank, a chieftain also acquired *jagirs* whose income exceeded the income from their patrimonial holdings. For instance, in the seventeenth century, a *mansabdar* holding a rank of 5,000 sowars would be assigned a *jagir* which yielded an annual revenue of Rs 8.3 lakhs. In addition to extra income, imperial service enabled these chieftains to recruit their own retainers and clansmen for maintaining the cavalry contingents required by the *mansabdari* regulations.[109]

Each *mansabdar* had two ranks: zat and sowar. The zat (personal) rank reflected the *mansabdar*'s position in the imperial hierarchy and the sowar rank reflected his obligation to maintain the required number of cavalry in lieu of the *jagir* assigned to him.[110] Thus, a particular *mansabdar* might have a higher zat rank (2,000) and a lower sowar rank (for instance, 1,000). This *mansabdar* had to maintain 1,000 cavalry but drew the pay for maintaining about 2,000 cavalry. The *jagirs* being service assignments were neither hereditary nor permanent.[111] There were frequent transfers of the *mansabdars* and after the death of a particular *mansabdar* his *jagir* was reassigned to another *mansabdar*.[112] One can argue that, between the sixteenth and seventeenth centuries, the power of the state was increasing in India. The Vijayanagara ruler, unlike the Mughal Emperors, had no power to transfer the hereditary chiefs from one region to another region.[113]

There were no training academies for the *mansabdars*. They acquired battlefield experience as part of on-the-job training. In contrast, the Ming Empire experimented with the issue of military training. The Ming official Wang Shouren (1472–1529) felt that the border regions were vulnerable and the Qing Empire should create a band of soldiers with skills that went beyond riding and shooting. Wang believed that, without an understanding of strategy, the commanders would be impotent. So, in 1400, Wang proposed a training programme that emphasized military theory and decision making and the students were to be drawn from the elite families as well as from the Ming Dynasty's military academies.[114]

During Shah Jahan's reign (r. 1627–58), the *mansabdars* absorbed some 82 per cent of the land revenue income of the state.[115] In the twentieth year of Shah Jahan's reign there were 8,000 *mansabdars*.[116] Besides the contingent of the *mansabdars*, the standing army under direct control of the crown under Shah Jahan comprised 47,000 mounted musketeers, foot musketeers, gunners and archers. The annual expenditure of the *ahadis* came to about Rs 100 lakhs.[117] Under the strongest Safavid monarch Shah Abbas, the standing force of the Safavid Empire known as Qorchi Corps numbered 10,000 men.

They were commanded by *ghulams* (and not Qizilbash tribal *amirs*) and like the *ahadis* were paid directly from the revenues of the *mamlik* land.[118] The strength of total Mughal force in 1647 (including the contingents of the *mansabdars* and the zamindars loyal to the Mughals) came to about 911,400 cavalry and infantry. And Mughal annual revenue at that time amounted to 880 crores of *dams*.[119]

Unlike the small standing army of the Mughal Emperors, the Qing Dynasty maintained a standing army drawn primarily from the banners. The Qing Emperors did not follow the policy of dismantling armies after a crisis was over.[120] The salaries of the Qing soldiers were paid partly in kind and partly in cash. While the common soldiers' income was partially paid in food rations, the officers received monetary salaries. The high-ranking military officers were supposed to pay a portion of their salaries to compensate for some of the costs related with their military duties like repairing the soldiers' weapons and equipment, providing rewards to the soldiers on certain occasions, etc. The Bannermen and Green Standard soldiers, besides feeding themselves and their families, had to use a portion of their cash stipends to purchase and repair some of their equipment and weaponry. The soldiers were responsible for purchasing and maintaining traditional types of weapons such as bows, arrows and knives, and most of their equipment such as armour, arrow head bags and banners. The state apparatus manufactured and supplied firearms. In peacetime many soldiers did not attend to their weapons and equipment by regularly spending a portion of their salaries, despite periodic examination by their superiors in this regard.[121]

Mansabs were granted to the Persian and Turkish warriors who migrated to India. In addition, to co-opt potential rebels and also to broaden their rule, *mansabs* were issued to the Rajput chiefs and zamindars of North India. The Rajput *mansabdars*, besides being granted *jagirs*, were allowed to maintain their ancestral patrimonial holdings (known as *watan jagirs*). From the time of Shah Jahan onwards, *mansabs* were also granted to the deserters from the Deccani sultanates in order to weaken those polities. The Mughal Emperors faced continuous pressure from their nobility to raise the rank and number of *mansabs*. Sometimes political conditions also forced the emperors' hands. Increase in the number and ranks of *mansabdar*s created fiscal pressure for the Mughal Empire, especially when its agrarian resources were not expanding at the same rate.[122]

Around circa 1600, the Mughal Empire controlled 3.2 million square kilometres with a population of about 150 million.[123] The Ottoman Empire's population at that time was 22 million and the Safavid Empire had 10 million inhabitants.[124] As a point of comparison, in the early sixteenth century, there were 4 million people in England and Wales, 10 million in France and 7 million in Spain, plus another 4 million in its Italian territories.[125] About 80 per cent of the Persian and 90 per cent of the Indian populace were engaged in agriculture and related activities.[126] Agriculture constituted more than 50 per cent of the Mughal Empire's gross domestic product (GDP).[127] From the

time of Sher Shah and Akbar, land revenue was extracted in cash which reflected the monetization of the economy.[128] The peasants had to sell the grain in order to pay the revenue in cash.[129] A silver coinage was established in 1540 and most of the silver was imported through Europe, which in turn acquired silver from Spanish America. The Mughals imported one-third of the silver which entered Europe between 1600 and 1750. Most of the silver entered Mughal India through the ports in Gujarat, and the Ahmedabad mint was one of the principal silver coin production units in Mughal India.[130] The Hindu bankers served as lenders of cash and credit, and receivers and remitters of land revenue as well as being financiers and tax farmers.[131] The nobles obtained credit at a high rate from the bankers by providing their *jagirs* as security. The house of Jagat Seth (Marwari bankers from Rajputana) was in charge of sending the imperial tribute from Bengal to Delhi after 1728. Jagat Seth and his accomplices had personal access to the Mughal Emperors during the 1720s and the 1730s. The House of Jagat Seth obtained *farmans* regarding appointment of high officials.[132] The Mughal economy generated a lot of coins backed up by monetization of the economy supported by cash crop cultivation. The issue is why did the Mughals continue paying the soldiers and their officers (except the *ahadis*) with *jagirs*? This was because the custom in India from post-Maurya Empire onwards was to pay the soldiers with land grants. Every successful soldier wanted to become a landowner of some sort as it provided him with prestige in local society. Plagiarizing Karl Marx, one can say that the dead hand of culture prevented the Mughal Emperors from resorting to wholesale cash salary for their military establishment.

M. Athar Ali rightly argues that the Mughal polity was a solid entity because a political organization which demanded and at times extracted 40 per cent of the value of produce from the peasants cannot be categorized as a weak state.[133] At best the Vijayanagara Empire demanded 33 per cent from the gross produce of the peasants.[134] In the seventeenth century, the Mughal economy suffered from less than one-digit inflation. The total area under cultivation and population increased slowly. Nevertheless, the Mughal fiscal resources did not increase in real terms.[135]

This was probably because of the increasing rebellions of the zamindars and rich peasants. If we follow Streusand's interpretation of Abul Fazl's figures, then the Mughal Empire under Akbar enrolled some 10 per cent of the male population of the subcontinent in its military establishment.[136] A significant chunk of the rest of the armed male populace was available as free-floating mercenaries who could be assembled by ambitious local strongmen and warlords to disturb and challenge the public order. The Mughals had to conduct continuous low-intensity operations against the 'bandits'. Most of them were impoverished peasants, demobilized soldiers and deserters from the Mughal and various sultanates' armies as well as ex-officials of these above-mentioned polities. These bandit leaders controlled infantry, cavalry and artillery and possessed fortresses made of stone and mortar. In fact, during the first decade of the eighteenth century, some of the private soldiers

maintained by these bandits were equipped with double-chambered muskets, each of which was able to fire a second round without reloading.[137] Imperial campaigns against them were frequently led by the *faujdar*s and *subadar*s comprising a force exceeding 10,000 cavalry and several artillery pieces which were required to smash the earthen fortresses of the armed peasantry.[138] The fiscal situation was further aggravated by continuous military expeditions of the Mughals in Deccan which resulted in heavy expenditure.

Mughals, Marathas and the Deccani sultanates

The Konkan is an area of heavy rainfall (100 to 120 inches annually). Rice is the main crop here, and dense mango groves, plantain orchards and coconut palms also grow in this region. The districts of Thana, Kolaba and Ratnagiri (including the state of Savant-Vadi), an area of 10,000 square miles, are a Marathi-speaking region. After crossing the Western Ghat eastwards, there is a belt of land some 20 miles in breadth called Dang or Maval in the north and Mallad in the south. This region is rugged, a series of table lands cut on every side by deep winding valleys. From the valleys, hills of various size and shape emerge, with terrace and steep sides strewn with black basalt boulders. Patches of evergreen forests are scattered here and there. The Western Ghat has thrown a large number of short spurs eastwards, and every two of them enclose a valley. Besides the two big rivers Godavari and Krishna, small streams flow into these valleys. East of the spurs, the valleys widen out and form the *Desh*, which constitutes the vast rolling black soil plain of Central Deccan. All the above-mentioned regions together constitute Maharashtra (western Deccan), a rough total of 28,000 square miles. East of the Ghats, the rainfall decreases and was uncertain and insufficient for lucrative agriculture till the beginning of the twentieth century. Further, the soil is sterile and broken up by low ranges of bare rocky hills.[139]

The Mughals started launching pin-prick attacks in Deccan from Akbar's reign onwards. Under Akbar's son Jahangir (r. 1605–27) and grandson Shah Jahan (r. 1627–57) respectively, several campaigns with limited aims were launched. However, the last great Mughal Aurangzeb (r. 1658–1707) implemented a comprehensive plan to annex Deccan to the Mughal Empire. Overall, the Mughals enjoyed no gunpowder superiority over the Deccani sultanates. Let us see how Mughal intervention in Deccan started.

In 1595, Burhan Nizam Shah II of Ahmadnagar died. He was succeeded by Ibrahim Nizam Shah. Ibrahim appointed Mian Manjhu as Prime Minister. Mian was opposed by Ikhlas Khan, the leader of the Abyssinian troops. Civil War in Ahmadnagar gave Akbar an opportunity to intervene.[140] On 18 December 1595, Prince Murad accompanied by Khan Khanan and Raja Ali Khan laid siege to Ahmadnagar city. The Mughals maintained a siege train which included *beldars* and *tabardars* (pioneers and sappers).[141] The Mughals started laying mines on the walls of the city.[142] The role of gunpowder weapons in Mughal siege warfare increased from the time of Akbar onwards. In

1573, the Mughal Army captured the Fort of Surat after a siege of 47 days. Abul Fazl notes:

> The pioneers made from a long distance trenches and so brought themselves to the walls and began to break them down, and the alert servants raised mounds (*tilha*) around it, and from them showered bullets on the garrison, and the bombardiers also performed marvels.[143]

It seems that there was some advance in the art of mining on the part of the Central Asian nomads between Timur and Akbar. The Mughals dug at the walls of the fort and then mined it. On 21 February 1596, some 30 yards of wall collapsed. However, a mine planted by the Mughals was discovered by the garrison. This mine was emptied by the garrison. The Mughal infantry failed to attack immediately. This delay allowed the garrison to rush in reserves and repair the wall.[144]

A contingent of Ahmadnagar's mercenary force, comprised of light Maratha cavalry led by a Koli chief, harassed the Mughal Army's lines of communication. It was a foretaste of things to come. The Mughals were further troubled by the news that the sultanates of Bijapur and Golkunda had sent a joint relief army to aid Ahmadnagar against the Mughals. The Mughals decided to negotiate. On 14 March 1596, the Mughals raised the siege on condition that Berar would be ceded to them. However, Ahmadnagar was not willing to vacate Berar once the Mughals raised the siege of their capital. On 8 February 1597, at Asthi, the Mughals met the combined force of Bijapur, Golkunda and Ahmadnagar.[145] The Mughal Army crossed River Godavari and deployed for battle. Nizam-ul-Mulk commanded the centre and Qutub-ul-Mulk commanded the left wing. The *uqci* on the right flank under Sher Khwaja drove back the combined Deccani force under the Bijapuri General Suhail. Then, the vanguard and the right wing attacked the Deccanis. The Deccani force retreated, leaving behind lot of hand-held firearms. The Mughals were able to capture the Deccani artillery park and 40 elephants. After the battle, Murad and Sadiq wanted Khan-i-Khanan to advance against Ahmadnagar, but the latter, being cautious, refused.[146] The point to be noted is that not firearms but mounted archery gave victory to the Mughals. At this stage, the Mughals had no answer to the harassing tactics of light Maratha cavalry. Nor were the Mughals able to capture the Deccani forts with gunpowder weapons very quickly. However, Mughal battlefield supremacy remained unchallenged.

The city of Ahmadnagar was finally captured in 1600. The moat in front of the fort was 30–40 yards broad and 7 yards deep. The wall of the fort was made of basalt and 27 yards high. The Mughals set up artillery batteries to engage the defenders. Then mines were laid to blow up the glacis. The explosion destroyed one of the towers of the fort. In the morning of 16 August, some 180 *man*s of gunpowder was used to blow up parts of the wall. The walls were blown, and then the Mughal infantry assaulted. After the garrison

suffered 1,500 dead, they surrendered. The successful siege lasted for four months and four days.[147] In 1608, Malik Ambar, the dictator of Ahmadnagar Sultanate negotiated an alliance with Sultan Ibrahim II of Bijapur so that he could concentrate all his forces against the Mughals in the north.[148] After the death of Malik Ambar in 1626, the Ahmadnagar Sultanate disintegrated.

Civil war in the Mughal Empire gave a brief respite to the Deccani powers. On 6 September 1657, Shah Jahan fell seriously ill. Shah Jahan deputed his eldest son Dara Shiko as his successor. In November 1657, Shuja (one of Shah Jahan's sons and *Subadar* of Bengal) crowned himself Emperor in Bengal. Under Sulaiman Shiko (Dara's son) and Raja Jai Singh (a Rajput *mansabdar*), an imperial force numbering 22,000 was sent against Shuja. Muhammad Murad Baksh, youngest son of Shah Jahan and *Subadar* of Gujarat proclaimed himself Emperor on 5 November and made an alliance with Aurangzeb, then *Subadar* of Deccan. Maharaja Jaswant Singh of Marwar (another Rajput *mansabdar*) was appointed *Subadar* of Malwa by Shah Jahan and was ordered to engage Aurangzeb. Similarly, Kasim Khan was made *Subadar* of Gujarat and was ordered to check Murad. On 25 February 1658, Murad and Aurangzeb joined forces at Dipalpur.[149]

On 15 April 1658, Aurangzeb and Jaswant Singh met each other at Dharmat. Jaswant was defeated after 6,000 of his soldiers were killed and the deputy imperial commander Qasim Khan escaped from the battlefield. On 23 May, Aurangzeb crossed the Chambal River and Dara advanced from Dholpur. On 28 May, Aurangzeb deployed his army about 1.5 *cos* from Dara's camp.[150]

On 29 May 1658 at Samugarh, Dara and Aurangzeb's forces confronted each other. Dara had 50,000 soldiers. The length of his front was about 2 miles. The core of his force was comprised of the Rajputs. Several Muslim officers in his force like Khalilullah Khan and others were already corrupted by Aurangzeb. Dara deployed his artillery in one row in the front all along his line. Behind the artillery line, he stationed the foot musketeers and then the elephants, and behind them, in the last and fourth line, the cavalry. Dara's artillery was immobile and the guns were manned by inefficient crews. Further, the transport animals of Dara's army were in bad shape. In contrast, Aurangzeb's field guns were manned by European mercenaries under Mir Jumla. Further, Aurangzeb's field guns were well supplied with munition. The battle started at noon when Dara's artillery opened up all along the front. They made a lot of noise, but did not not case much death among the enemy's ranks. After one hour of firing, Dara ordered a cavalry charge. The sword-wielding cavalry on Dara's left wing under Rustam Khan attacked Aurangzeb's artillery park under Saif Shikan Khan. The guns and the musketeers behind them fired simultaneously at Rustam Khan's charging cavalry. Then, Aurangzeb's infantry, equipped with muskets, bows and javelins, also attacked Rustam Khan's charging cavalry. Faced with the bullets and cannonballs, Rustam Khan's cavalry contingent swerved right and moved towards Aurangzeb's van. Bahadur Khan, commanding the right flank of Aurangzeb's centre, moved towards the front and closed the gap between Aurangzeb's artillery park and

the van. In the close-quarter combat which ensued, Bahadur Khan fell down wounded. At that juncture, Aurangzeb's reserve under Shaikh Mir moved to aid Bahadur Khan's contingent. Rustam Khan died fighting and his contingent, after being defeated, withdrew. At that juncture, the Rajput troopers from Dara's vanguard and his right wing penetrated between Zulfiqar Khan's artillery and Aurangzeb's left flank which comprised Murad's troops. The Rajputs wearing saffron clothes were on a suicide mission. Murad was wounded and, after defeating Aurangzeb's left wing, the Rajputs turned towards Aurangzeb's centre. However, the outnumbered Rajput contingent was finally checked by Aurangzeb's centre. The defeat of the right and left wings of Dara's army gave victory to Aurangzeb.[151] Saqi Mustad Khan, a Mughal chronicler, writes that the battle was lost mostly due to Dara's indecisiveness. Even after the death of imperial commanders like Rustam Khan and Rao Chhatra Sal Bundela, Dara had a large reserve. But, instead of feeding the reserve into the battle, when Aurangzeb's force was exhausted, Dara lost heart. He dismounted from the elephant and escaped from the battlefield on the back of a swift horse.[152] So, the role of individuals and not merely hardware and size of force do count in the victory and defeat in battles.

This battle shows the transition in the methods of Mughal warfare between the first half of the sixteenth century and the first half of the seventeenth century. Unlike at the First Battle of Panipat, the mounted archers did not play an important role at Samugarh. Second, in contrast to the Second Battle of Panipat, elephant charge was unimportant in Samugarh. Rather, Samugarh was decided by command and firepower. Artillery and musketeers were becoming important integers of South Asian battlefields. Interestingly, while at the First Battle of Panipat, Babur's gunners were from Rum, at Samugarh, the Mughal gunners were *ferangis*. It shows also the gradual superiority of West Europe in gunpowder weapons vis-à-vis the Ottoman Empire.

On 11 June 1658, Aurangzeb occupied Agra. After getting rid of Dara, Aurangzeb had to tackle his brother Shuja. On 4 January 1659, Shuja clashed with Aurangzeb's army at the village of Korra (also known as the Battle of Khajwa). Aurangzeb had some 90,000 cavalry. Shuja deployed his artillery in front of his troops. Shuja resorted to bombardment throughout the day. During the night both sides rested. Next day, both sides started combat by firing rockets, guns and muskets. Maharaja Jaswant Singh, who had accepted Aurangzeb's service and was commanding Aurangzeb's right wing, deserted to Shuja and attacked Muhammad Sultan's (a loyal officer of Aurangzeb) contingent. Aurangzeb himself was guarded by 2,000 select cavalry. After being defeated, Shuja escaped from the battlefield.[153]

Dara fled to Lahore and gathered a force of 20,000 cavalry. Dara then, with his new force, advanced to Ajmir/Ajmer and on 9 March 1659 got ready for battle. As Aurangzeb's army approached near Ajmir, Dara fortified the hill passes. The imperial army under Aurangzeb camped at Deorai, about three *cos* from Ajmir. The ensuing encounter is known as the Battle of Deorai. On 10 March, Auranzeb's army advanced and cannonaded the hill

passes. Dara's soldiers responded with cannon and musket fire. The cannonading continued even in the night. As the force of Aurangzeb attempted to force the pass by launching an infantry assault, Dara lost heart. Though his trenches remained intact, Dara fled to Gujarat.[154]

When Aurangzeb ascended the throne, the three big powers in Deccan were the Marathas, Bijapur and Golkunda. While the Marathas in the reign of Shah Jahan functioned as mercenaries of the Deccani sultanates, in Aurangzeb's reign, they acquired the ambition of founding an independent kingdom under their charismatic leader Shivaji. Besides continuous lucrative mercenary military service, religious and cultural reformers also strengthened the Marathi identity. One was saint-poet Tukaram (1608–49) who was born in the village of Dehu on the banks of the Indrayani River. He was a Sudra. Tukaram worshipped Vithoba (Vishnu), and his *abhang*s (verses) shaped the collective consciousness of the Deccan's Hindu populace. Tukaram was influenced by the Marathi saint-poet Namdev (d. 1350).[155] The Maratha military power could be traced back to Shahji Bhonsle, the eldest son of Maloji who was born in 1594. As a child, he was married to Jija Bai, the daughter of Lakhji Yadav Rao, ruler of Sindkhed and one of the most powerful nobles of Ahmadnagar.[156] Shivaji was the second son of Shahji. Shivaji (b. 1630; d. 1680) expanded his realm at the cost of Bijapur and Golkunda. In 1657, Shivaji conquered the Konkan region.[157] When the Mughal war of succession broke out in the last days of Shah Jahan, Shivaji attacked the Mughal dominion. When the Mughals retaliated against Shivaji, Bijapur and Golkunda supported the Marathas in order to maintain a balance of power in Deccan. The core of Shivaji's army was comprised of peasants of the Maratha and Kunbi castes. The Maratha peasants used to join the EIC's Bombay Army during the eighteenth century.[158]

In May 1663, Shivaji launched a night attack against the camp of Shaista Khan, the Mughal *Subadar* of Deccan. The *subadar* himself was wounded and his son Abul Fath Khan died in this encounter. As a mark of disfavour, Aurangzeb transferred the *subadar* to Bengal and Prince Muhammad Muazzam was appointed as the *Subadar* of Deccan. On 12 June 1665, Shivaji submitted to the Mughal *Subadar* of Deccan Raja Jai Singh. Shivaji surrendered 23 of his forts and in return his son Sambhaji was appointed a *mansabdar* of 5,000 troopers and Jai Singh was rewarded with the rank of 7,000.[159]

Since Adil Khan of Bijapur aided Shivaji when the latter was fighting the Mughals, Aurangzeb ordered Jai Singh to move against Bijapur.[160] In October 1666, the Mughal Army laid siege to Bijapur. It was a large fortified city whose walls ran for more than 10 kilometres. The thickness of the wall varied between 9 and 10 metres and the height was about 10 metres. There were crenellations in the city walls. The crenels were in the shape of regular notches pierced by loopholes. The merlons were pierced by a single loophole on the inner face. The gateways were protected by barbicans. Most of the towers were polygonal or semi-circular in shape. The fortress architecture was a break from the square towers of the early medieval Hindu forts.[161]

In March 1682, Aurangzeb came to Deccan and personally assumed charge of military operations in this region. Till his death in 1707, the emperor ceaselessly conducted operations against the three powers in the Deccan. Aurangzeb was the contemporary of the Manchu Kangxi Emperor (1654–1722; r. 1661–1722).

The Mughal co-option policy which worked with the Rajputs in North India did not work in Deccan due to social, cultural, economic and military factors. The Rajputs had the concept of *namak halali* (loyalty to the salt giver). This enabled the Rajputs to give unqualified loyalty to their overlord: the Mughals. This cultural norm was absent among the Marathas. Again, there were distinct clans among the Rajputs like Hadas, Chauhans, etc. The Mughals at times played various clans against each other. Distinct clan identities among the Marathas were absent. Between 1630 and 1670, agricultural yields declined in Deccan due to famines, plague, failures of monsoon, over-exploitation of agricultural resources and continuous warfare. Not only did the *jagirs* in Deccan yield less revenue compared to those in North India; worse, there was tension between the Mughal nobles and Deccani nobles (those who were previously in the service of the Deccani sultanates and later joined the Mughals) about the amount of *jagirs* that would be issued to each group.[162] These factors hampered the Mughals from integrating the Marathas fully within their military establishment as part of their Military Transformation process. Finally, in the fertile plains of North India, the cannon-cavalry combination of the Mughals was dominant. But, in the rocky dry parts of Maharashtra, the Mughals had no answer to the harassing tactics of the Maratha peasants mounted on small ponies and equipped with spears, javelins and muskets. Realizing that they stood no chance against the armoured cavalry of the Mughals supported by field artillery, the Marathas refused to confront the Mughals in pitched battles. The Marathas attacked the Mughal logistical infrastructure by cutting the communication lines of the Mughals and pillaging and plundering the *jagirs* of the *mansabdars* to prevent the latter from drawing any revenue and supplies for their contingents. In fact, Shivaji raised mobile guerrilla warfare known as *ganimi kava* conducted by light cavalry to a sophisticated art. Shivaji also carried out dare-devil long-range plundering raids deep inside the Mughal Empire.

However, it must be noted that the Mughal economy and army were not going for a linear collapse due to Aurangzeb's overinvolvement in Deccan. The argument by the Classical Marxist scholars that over-taxation of the poor peasantry resulted in frequent peasant rebellion which destroyed the Mughal Empire[163] was simplistic. In fact, modern research shows that certain regions of India (especially Punjab and North India, the core of the Mughal Empire) were experiencing rapid economic growth in the early eighteenth century. The Mughals failed to tap the extra surplus from the countryside which was sucked up by the rich peasantry (*khud kashta*) due to institutional failure on the part of the imperial centre. In fact, the Mughals tried to adjust to the new economic scenario by replacing the *jagirdari* system with the

ijaradari system (a quasi-capitalist farming system).[164] Aurangzeb, somewhat like Shah Abbas, also tried to revoke *jagir* grants and transform them into *khalisa* land. But, politics intervened. The *mansabdars*' class interest was threatened. After the death of Aurangzeb, his weak successors were unable to tame the powerful Mughal ruling class. The Mughal economy was facing strains from the late seventeenth century. Still, the Mughal economic foundation was more solid compared to the Safavid 'export' economy which relied on exporting silk through the Ottoman lands and through the medium of West European traders for the markets abroad. In the early eighteenth century, when Bengal silk replaced Persian silk from the European market, the Safavid economy went into a headlong collapse.[165] The Marathas were able to wear down the Mughal Army but could not annihilate it. The Marathas had survived by not getting defeated by the Mughals. But, they had been unable to defeat and destroy the Mughals. The Marathas became a mortal threat to the empire only when the Mughal Army was destroyed due to a conventional threat posed by a foreign invader.

Nadir Shah and Mughal collapse

In 1738, the objective of Nadir Shah (r. 1736–47), the monarch of Persia, was to destroy the recalcitrant Afghans. Nadir had a hidden agenda. Under the guise of a complaint that the Mughals were not taking adequate action against the anti-Persian Afghans, Nadir decided to attack the Mughal Empire. The Mughal *durbar* failed to respond positively to Nadir's diplomatic overtures. The Mughal nobles were divided and the Maratha 'problem' demanded most of their attention. Further, the Mughal nobles were not sure how long Nadir would last. The Mughal court was confused about whether Nadir was to be treated as a usurper or a monarch of Persia. And how to deal with the situation if Nadir was overthrown and the Safavids made a comeback? The Mughal *durbar* dithered and refused to deal with Nadir's envoys. The Mughals pursued a 'do nothing, but wait and watch' policy. However, time was running out for the Mughals.

On 21 May 1738, Nadir marched towards Afghanistan. On 11 June, he reached Ghazni.[166] The Mughal garrison in Kabul was in arrears of five years' pay.[167] Still, Sharza Khan, the Mughal commandant of the Kabul citadel decided to fight Nadir. On 11 June 1738, the Mughal garrison, equipped with muskets, attacked Nadir's besieging army but was driven back to the citadel. Nadir started a heavy cannonade of the citadel and on 19 June one tower in the citadel collapsed. And the stone wall of the fort was also breached, through which the Persian assault columns advanced. The Mughal garrison at Kabul citadel surrendered on the same day. On 1 July, Nadir's son Nasirullah, after subduing Ghorband and Bamian, joined the main Persian force under his father at Kabul. On 19 July, lack of provisions forced Nadir to move from Kabul. Nadir's force, after defeating the local clans, occupied the fertile and populous hills of Chahar ek kar Najrad and Safi. Some of the

defeated Afghan clansmen were pressed into Nadir's army. On 25 August, Nadir occupied Jalalabad and captured the grain stored there. The Mughal *Subadar* of Jalalabad fled and the fort capitulated to the Persians on 7 September. Then, Nadir moved to the south of Jalalabad towards Bahar-Showlani. On 3 November, he crowned his eldest son Mirza Raza Quli as regent (deputy ruler) of Persia and sent him back with a strong contingent. On 12 November, Nadir detached an advance guard of 12,000 cavalry for reconnaissance. Another 6,000 soldiers guarded Nadir's person. After Nadir's bodyguard division, marched the centre and rear guard of the Persian Army.[168]

Nasir Khan, the Mughal *Subadar* of Kabul, was at Peshawar when he heard that Kabul had fallen to Nadir. He with some 20,000 Afghan tribesmen raised from the Khaibar and Peshawar districts blocked the Khyber Pass. Nasir's objective was to contain Nadir between Ali Masjid and Jamrud about 12 miles west of Peshawar. Nasir's tribal levy lacked military training and they suffered from logistical breakdown. On 26 November, Nadir moved towards the Khyber Pass. Nadir sent 12,000 men towards the Khyber Pass. Nasir was expecting the Persian attack from the side of Jalalabad. Meanwhile, Nadir with 10,000 light cavalry moved through Bazar Valley, turned north and appeared at the rear of the Mughal blocking force. The Mughals were surprised and Nadir's attack was completely successful.[169] However, it must be noted that Nasir Khan with 7,000 regular Mughal troops opposed Nadir's victorious army for some time before being taken prisoner. On 12 December, Aka Muhammad was sent ahead with a strong contingent to build a bridge over the Indus river at Attock. The Persian soldiery was able to cross the other five rivers of Punjab (Jhelum, Chenab, Ravi, Beas and Sultlej) easily because, in the winter, these rivers were easily fordable. Chenab was crossed at Wazirabad about 60 miles north-west of Lahore on 8 January 1739.[170]

The Persians advanced towards Punjab. The Mughal *Subadar* of Lahore Zakariya Khan commanded 15,000 cavalry and some militias. Zakariya detached 5,000 men under Qalandar Khan to hold the Qacha Mirza Fort at Yaminabad, some 30 miles north of Lahore as an advanced post. Zakariya with 12,000 soldiers guarded the bridge of Shah Duala. Nadir's advance guard took the fort after the death of Qalandar Khan in battle. As Zakariya retreated to Lahore, Nadir captured the Shah Duala Bridge.[171] Zakariya Khan established a fortified camp defended by big artillery pieces north of Lahore on the bank of the River Ravi. Nadir, by making a wide detour, avoided Zakariya's camp and crossed the river downstream (as in the case of Alexander bypassing Porus's camp and marching downstream to cross the Hydaspes) and encamped at Shalimar Garden, five miles east of Lahore. The Persians launched an attack on Lahore on 11 January 1739. At Mulkpur, 12 miles away from Lahore, a Mughal relieving column was wiped out by Nadir's force. Zakariya realized that Delhi would be unable to send him any military aid in the near future. So, on 21 January 1739, Zakariya Khan surrendered to Nadir.[172]

After staying at Lahore for 16 days, Nadir resumed his march towards Delhi. Nadir organized an advance guard comprised of a cavalry contingent, which was tasked to conduct swift raids and plunder the cities and the villages. The objective was to gather provisions for his army and to deny them to the Mughals. Second, the advance guard also conducted reconnaissance some 30–40 miles in front of the Persian Army. On 5 February 1739, Nadir reached Sirhind.[173] From Sirhind, Nadir detached 6,000 Kurdish cavalry under Haji Khan to conduct a reconnaissance of the Mughal position. Nadir with the main army marched towards Ambala.[174]

After the Mughal provincial armies of Afghanistan and Punjab were destroyed, Emperor Muhammad Shah (r. 1720–48) mobilized the central army. His two principal nobles were Khan-i-Dauran and Qumar-ud-din. The emperor ordered the *Subadars* of Deccan (Nizam ul Mulk Chin Qilich Khan) and Awadh (Sadat Khan) to join the central force at Delhi. In desperation, Muhammad Shah also wrote to Maratha *Peshwa* Baji Rao I for aid against the foreign enemy. Baji Rao's policy was that the Marathas would oppose the Persians if the latter crossed the River Narmada for invading Deccan.[175]

The Mughal Imperial Army without Sadat Khan left Delhi on 13 December 1738. Emperor Muhammad Shah joined the army towards the end of January 1739. Around the middle of February, the Mughals camped at Karnal some 75 miles north of Delhi. The Mughal camp was located to the north of the town of Karnal. The Mughal commanders selected Karnal for making their fortified camp because of the supply of abundant water from Ali Mardan's canal. And the extensive plain in front of Karnal (seven miles wide, stretching from Karnal city to the River Jamuna) also allowed Mughal cavalry the space to manoeuver freely. Here, the Mughals decided to wait for further reinforcements from Rajputana and Awadh.[176] The Mughal camp was surrounded with a mud wall about 16 miles in circumference. Huge cannons were placed on the wall. On the eastern side of the camp was a canal. And there was a jungle on the north side of the camp.[177] The Mughal Army at Karnal numbered 200,000 men (of them 80,000 were combatants) and 2,000 elephants (some were war elephants and the rest were baggage animals).[178]

On 19 February 1739, Nadir with the main force reached Shahabad, 35 miles north of Karnal. On the same day, Haji Khan's contingent clashed with the Mughal advance guard and dispersed them. After killing many Mughal troopers and capturing some prisoners, Haji Khan's cavalry withdrew to Sarai Azimabad. On 22 February, Nadir's main force reached Sarai Azimabad. In the morning of 23 February, Nadir with his bodyguards conducted a personal reconnaissance of the Mughal camp. In the evening of the same day, Persian spies reported to Nadir that Sadat Khan had reached Panipat with 30,000 men (20,000 combatants). Nadir immediately ordered a detachment to attack Sadat Khan.[179]

On the morning of 24 February 1739,[180] Nadir divided his army into three divisions. Nasirulla Mirza commanding the left wing was ordered to advance from Jamuna towards Karnal. Nadir himself with a division moved between

Jamuna and the Ali Mardan Canal. Meanwhile, Sadat Khan had eluded the Persian contingent sent to attack him and entered the Mughal camp. When he was paying respects to the emperor, news came that the Persians had attacked his baggage guard. Sadat without heeding the advice of other Mughal nobles immediately ordered his men to get ready and attack the Persians. His troopers were already dog tired after a long march from Awadh to Karnal, but Sadat did not pay any heed to it.[181] Thus, the battle started on the basis of an *ad hoc* decision made by one Mughal noble.

Sadat left the camp with 1,000 cavalry and some infantry. It was a foolhardy decision taken at the heat of the moment. A Persian patrol in front of Sadat feigned flight with the aim of luring Sadat Khan's party away from the Mughal camp. The Persian plan succeeded as Sadat impetuously followed them. Meanwhile, Sadat asked for reinforcements. Muhammad Shah wanted to follow him, but Nizam and Khan-i-Dauran dissuaded him. But, at the emperor's insistence, Khan-i-Dauran commanding the Mughal right wing advanced with 9,000 cavalry. Nadir himself, dressed in full armour, with 1,000 bodyguard cavalry, moved to various sites of the battlefield directing the battle. Nadir detached two contingents of 500 men, each equipped with *jezails* (long-barrelled muskets) to draw Sadat Khan and Khan-i-Dauran to a trap. Nadir placed 3,000 men to ambush the Mughals. In order to frighten the Mughal war elephants, like the Arabs, Ghaznavids and Ghorids before him, Nadir ordered his soldiers mounted on camels to carry naptha fire.[182]

The battle started at one in the afternoon. Sadat Khan and his party left the Mughal camp in haste without any artillery support. Further, they become disorganized due to the quick advance. Sadat's contingent was attacked by the Persians at Kunjpura. The Persian *jezailchis* under Fath Ali Khan Kayani poured a destructive fire on Sadat's party from behind the buildings. Meanwhile, Khan-i-Dauran's contingent clashed with Nasirullah's division. There was no co-ordination between Sadat and Khan-i-Dauran's contingents. Small groups of soldiers from the Mughal camp in driblets joined combat with the Persians. Sadat Khan, like the Hindu and Sultanate rulers, directed the battle from the back of an elephant. His wounded elephant was captured by the Persians and he was made a prisoner. It was almost an action replay of what had happened to Porus at the Battle of Hydaspes. A combination of *jezail* and *zamburak* fire wore down Khan-i-Dauran's troopers equipped with swords. When the emperor ordered Nizam to go and help Khan-i-Dauran, the Nizam refused. By five in the afternoon, Khan-i-Dauran was mortally wounded by a *jezail* shot and his contingent was destroyed. The Mughal casualties totalled 30,000. On the Persian side, 2,500 were killed and 5,000 were wounded.[183]

After the battle was over, the Mughal Empire was finished in a de facto sense. After victory at Karnal, Nadir made Muhammad Shah a prisoner, marched to Delhi and, in Timur's style, plundered the city and then left for Persia. For a brief moment, Nadir was thinking of annexing India and establishing an Asian empire stretching from the Bay of Bengal to Baghdad.

It was one of the possible 'turning points' in Eurasian history, when history might have followed a different trajectory. Nadir had the world's most powerful army. And with the economic and demographic resources of such a vast political entity, Nadir might have defeated the Ottomans, Russians and the British EIC.[184] Before leaving India, Muhamamd Shah was reinstated by Nadir. However, Nadir annexed Kabul to the Persian Empire. The Mughal Emperor was humiliated and his authority and legitimacy vanished. Nadir had taken all possible cash from the treasury and the impotent central government was not in a position to collect any revenue. And none of the tributary chieftains were paying any tribute. The Delhi *durbar* had to disband its small standing army. The semi-autonomous *Subadars* of Awadh, Bengal and Deccan declared full independence. The Rajputs and the Jats refused to pay any further tributes. The Sikhs in Punjab started making raids towards Delhi. The Maratha inroad north of Malwa became frequent and more intense. After Nadir's assassination, his Afghan General Ahmad Shah repeatedly invaded Punjab. The authority of the decaying Mughal Emperor was confined to the environs of Delhi. And, in the 1750s, the Mughal Emperor became a plaything of the Marathas.

How to explain the Mughal defeat in the hands of Nadir Shah? Can we make a case that the Mughals were foolish in not replacing their cavalry system of warfare totally with gunpowder weapons? In England, the longbow was officially discarded in 1595. As late as 1625, several influential people in England recommended the reintroduction of the longbow.[185] The longbow was definitely superior compared to the crossbow, but inferior to the composite bows used by mounted archers. The West European armies developed longbow-equipped infantry in the medieval era due to the fact that the horse archers were not threatening these polities. In fact, during the late sixteenth century, the longbow was replaced by hand-held firearms in the English Army despite the former being a superior weapon system in terms of range, speed and accuracy, due to social and economic factors. Due to the enclosure movement, the practice of archery declined among the English populace. The decline in the skill of archery forced the English military establishment to replace longbow men with musket-equipped infantry.[186]

In fact, Nadir's military system comprised a combination of horse archers, heavy-musket-equipped infantry and field artillery. The Mughal military establishment was not frozen in time. We have seen that the role of war elephants was decreasing with time in Mughal warfare. During the War of Succession which followed towards the end of Shah Jahan's reign, elephants played no conspicuous role. And in Karnal, the elephants functioned as command vehicles and as baggage animals. At Karnal, the Mughal cavalry was equipped with swords rather than composite bows. This was because the Mughal *mansabdars* recruited cheaper local troopers rather than the steppe nomadic recruits and also due to a weakening of Mughal control over Afghanistan and rising turmoil in the region after the collapse of the Safavids. In addition, recruitment of the sons of the soil was also a technique followed

by the Mughal nobles in order to prevent the surplus military labourers from joining the bands of rebellious zamindars and the Marathas. Again, the Mughals were conducting continuous sieges against the forts in Deccan for the last century preceding Karnal. No army in the subcontinent deployed efficient field artillery against the Mughals. So, the Mughal focus was on developing siege artillery rather than manoeuverable, quick-firing light guns. A similar problem afflicted the Ottoman military machine during the eighteenth century. The Ottomans concentrated on capturing and retaining the forts in South-East Europe. As a result, the Ottomans focused on siege artillery and neglected field artillery. Lastly, the Mughals had musket-equipped infantry. But, the Mughals did not have a disciplined standing infantry force like the janissary corps. This has nothing to do with Islamic/Oriental/Indian culture but is to do with terrain and force structure. In the confined regions of South-East Europe, the Austrian forces organized in a linear battle order offered battle. Against them, Ottoman disciplined infantry equipped with firearms made sense. But, the same janissary corps was not so useful against Safavid cavalry manoeuvering in the wide space of Mesopotamia.[187] The crucial component of the Mughal Army initially remained the mounted archers. The breed of horse and skill of the cavalier with his bow were the principal considerations for military recruitment.[188] This by itself was no reflection of 'lack of vision' on the part of the Mughal Emperors. The matchlocks were able to fire one shot every two minutes. Hence, matchlockmen were liable to be crushed by a cavalry charge while they were in the process of reloading the matchlocks.[189] As a point of comparison, mounted archery remained important even in seventeenth-century China. Hung Taiji (1592–1636), who established the Qing Dynasty, emphasized the importance of riding and shooting.[190] The Mughals were not eager to manufacture a large number of flintlock muskets because they cannot be used properly from horseback.[191] In the South Asian context, infantry was used as auxiliaries to cavalry in the battlefields and in garrisoning or assaulting forts during sieges. However, the Mughal gunpowder-equipped infantry was not used properly at Karnal.

To use modern terminology along with hardware, Mughal deficiency in C3I made their defeat a certainty. For example, the Mughal *durbar* was in the dark about the routes taken by Nadir. But, the Persians knew about every move made by the Mughals in advance. Control and coordination among the various Mughal divisions in the battlefield was absent. High leadership on the part of the Mughals during the Persian invasion was pathetic. Compared to a nervous, apathetic and indolent Muhammad Shah, Nadir was a veteran of a hundred fights and full of energy before and during the battle. Despite the strictures of the structuralist historiography, the role of personality should not be underestimated. In the end, one can say, how many polities were able to fight Nadir Shah successfully as long as he was alive?

John Foran in an article asserts that the collapse of the Safavid Empire occurred due to a combination of long-term economic decline which got fused with medium-term political and ideological developments (i.e.

incompetence of Shah Hossein, rise of *ulemas*, faction fighting among the ruling class, which involved Georgians versus Persian nobility, etc).[192] To an extent, the Mughal collapse some 20 years after the Safavid was partly similar. The long-term economic decline in the case of the Mughals was much less serious than in the case of Safavid Persia. However, economic problems were aggravated for the Mughals due to medium- and short-term political causes. Muhammad Shah was as incompetent as Shah Hossein (r. 1694–1722). And faction fighting within the *mansabdars* certainly disabled the Mughal high command during Nadir's invasion. The Shia Irani faction led by Sadat Khan was opposed by the Sunni Turani faction led by Nizam. And this prevented any co-ordination among the *mansabdars* before, during and even after Karnal.[193]

Conclusion

Streusand, Kolff and Gommans rightly challenge Marshal G.S. Hodgson's notion of the three Islamic empires in general, and the Mughal Empire in particular, as being 'Gunpowder Empires'. However, the first three modern historians seriously underemphasize the role of hand-held firearms, field and siege artillery in the campaigns conducted by the Mughals. Our account has shown that gunpowder weapons and infantry played an important part in South Asian warfare. Both the Mughals and their opponents continuously upgraded their gunpowder and other weapons systems continuously. Both the Mughal Empire and the Ming Empire depended on Central Eurasian warhorses. India and China tried to breed horses in the drier areas of northern and central India and in northern and western China. But the quality of breeds depended on cross-breeding with Central Eurasian horses.[194] However, by the beginning of the eighteenth century, the roles of field artillery and muskets were becoming important in the battlefields of Asia in general and South Asia in particular. A standing army comprising of mounted archers and gunpowder infantry supported by light field artillery paid in cash by the central government, instead of cavalry raised through *jagir* assignments, was the need of the time.[195] This means a New Military Transformation was required. However, interests of the *mansabdars*, political weakness of the Mughal centre, low-intensity challenge posed by the Marathas and finally the conventional threat posed by Persia prevented the New Military Transformation from taking place. Continuous low-intensity conflicts against the armed peasantry in combination with external threat posed by the Persians and the Afghans resulted in the dismantling of the Mughal sovereignty in the early eighteenth century. The scenario was somewhat similar to that of China during the fall of the Ming Dynasty and the rise of the Manchus (Qing). The middle decades of seventeenth-century China during the Ming–Qing transition witnessed pillage, plunder and destruction caused by Manchu attacks and internal uprisings staged by the local bandits, thugs, rebels and roving soldiers.[196] Now, let us turn the focus onto the sea around the subcontinent.

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6 Naval warfare in pre-modern South Asia

Introduction

Any sort of periodization is open to criticism. Nevertheless, it is almost impossible for a historian to do away with periodization completely. Rather than a simplistic Hindu, Muslim and British period of Indian history (a view put forward by the British colonial scholars), a better triple division as far as the naval history of South Asia is concerned would be the ancient and early medieval era,[1] the medieval period and the age of European intrusion.[2] During the first period, most of the polities in the Indian subcontinent were 'Hindu' in ethos. The later part of the first period (early medieval era) witnessed the intrusion of Islam into the land and water bodies of the subcontinent. Gradually, the Arab traders displaced the Hindu traders and mariners from the maritime space of South Asia. The second period saw the dominance of Islamic nomadic warriors establishing cavalry-gunpowder polities in South Asia. The 'hat wearers' made their appearance towards the end of the medieval period of Indian history. Gradually, the West European mariners started displacing the Arab traders and merchantmen from the Indian Ocean. And the third period witnessed the rise of European (especially British) power in the Indian Ocean. It is to be noted that the ancient (including early medieval which is part of the ancient period), medieval and early modern eras of Indian history are not coterminous with similar time periods of European history. Further, in this chapter naval and maritime activities are discussed because these two issues are interlinked with each other. Unlike early modern West Europe, the Indian strategic managers did not come up with specialized naval fighting crafts. Vessels used in trade and commerce were used with certain modifications in warfare.

Till 1700, the littoral regions of the Indian subcontinent mainly engaged in overseas foreign trade.[3] This chapter takes the view that naval power is a complex amalgam of maritime activities, ports and harbours (including physical geography like products of the hinterland), and the complex system of fortifications along the coast. And for the continental empires of India and China, the sea and oceans were of limited importance. However, one must not forget that control over rivers was essential for transporting men and supplies.

This was an essential prerequisite for establishing and sustaining an empire. D.J.B. Trim and Mark Charles Fissel note the importance of amphibious operation for the pre-modern world and the problem of conceptualizing it as a separate branch of warfare in the following words:

> Ports are often far up estuaries. ... Even today there are many river-ports lying well inland that can be reached by ocean going vessels; in the period before 1700, when ships were smaller with shallower draught, the range of ports navigable from the sea was even greater. ... Sea blurs into estuaries, shallows, marshlands, lagoons, 'sea loughs' and rivers without clear dividing lines. Thus, to define operations launched from the sea as being of a separate type of war to those launched from or across inland waterways is to impose an artificial distinction, especially because, reflecting geographical reality, operations begun from saltwater have often organically and easily extended to include activity on freshwater.[4]

Hence, due attention is also paid to riverine/amphibious warfare. To use modern terminology, an amphibious operation is a combined or joint operation.

Jan Glete opines that amphibious warfare can be of two types: strategic movement of the armies across the sea and co-operation between armies and navies in littoral warfare. The first type is characterized by the concentration of an army on a transport fleet protected by a fleet of warships. Glete continues that, when sea lines of communication determine warfare on land, such military operations could be categorized as also amphibious.[5] Due attention is given in this chapter to both types of amphibious warfare. We will see later that the Cholas practised the first type of amphibious warfare and the Mughals practised the second type of amphibious warfare.

The Indian Ocean comprises about 20 per cent of the maritime space of planet earth.[6] Some details about the physical geography of the subcontinent are necessary. The Coromandel Coast extends from Nagapatnam (Negapatnam) to the mouth of the River Godavari along the Bay of Bengal in the East Coast of India. The Coromandel Coast extends to about 400 miles in length.[7] The South-West Monsoon breaks along the West Coast of India from June to early October. Konkan is the narrow strip of land between the Sahya Mountains and the Arabian Sea along the West Coast of India. The Konkan Coast extends from Daman in the north up to Goa in the south. It comprises of the districts of Thana, Kolaba and Ratnagiri, including Janjira and Sawantwadi. The Konkan is interspersed with several rivers, and sweet and salt water channels. Till the early nineteenth century, the mountainous tracts were covered with thick forest. Along the narrow margin of the coast where the soil is fertile, rice is cultivated. The felling of the forest accelerated the silting of the estuaries. Traditionally Konkan Coast is divided into two parts by the Savitri river. The region south of Savitri is called Het. The Coast of Thana is divided into two parts by the Vaitarana river. It springs from the Trimbak Hills and meets the sea at Arnala. Besides Vaitarana, the other river

in Thana is Kalyan/Ulhas. It starts from the neighbourhood of Bor Pass and flows about 80 miles in the north-west direction and reaches the sea near Bassein. A minor river of Thana is the Patalganga. Thana has several creeks. Starting from the north are the creeks of Dahanu, Chinchani, Uchali, Mahim and Malad. The present marshy shore of the Thana estuary was previously under water. The half-baked swamps now seen near Kalyan and Bhiwandi were flooded in the past at high tides. Sopara port, which remained important even in the eighteenth century, is in the process of silting up. A creek which runs between the mainland and Sopara separates them. The creek forms the southern branch of the Vaitarana estuary and it joins with the Kalyan-Bassein estuary in the north. South of Bombay, the coast is called Kolaba Coast. The coastal strip of Kolaba from Revas to Savitri is about 60 miles. Kolaba has two systems of rivers: one group flows northwards and another group flows westwards. The Amba river starts in the Sahya Hills near the Karanda Pass and flows westwards and reaches the sea north of Nagathone. Chaul port was on the river bank of the Kundalika, which rises in Sahyadri. The Kundalika flows through the wooded hills which rise behind a belt of salt marshes.[8] The spatial reach of the rivers in Peninsular India was limited. Even the big rivers were not navigable beyond a hundred miles, and the smaller ones were not navigable beyond a few miles.[9]

Most of the ports were located on the rivers, which enabled communication links with both the inland and the sea. Further, deltaic soil in which the ports were located was fertile and food for local consumption and raw materials for export could be grown easily.[10] For instance, in medieval India, Masulipatnam Port was dependent on the Golconda-Hyderabad hinterland.[11] Some of the important ports were Cambay/Khambat on the River Mahi, Surat on the River Tapti, Broach/Bharuch/Bharukacchha/Barigaza on the River Narmada, Arikamedu on the Ponnaiyar, Tamralipti/Tamluk on the Rupnarayan, Satgaon/Saptagram on the River Saraswati, Masulipatnam on the Krishna Delta, Hugli on the River Bhagirathi, Balasore/Baleshwar near the River Subarnarekha, Sonargaon on the the Shitalakhya and old Goa on the Mandovi. The important ports in the Malabar Coast were Muziris, Kollam/Quilon, etc.[12] In West India, one of the most important ports of medieval India was Thatta in Sind at the mouth of the River Indus.[13] The estuary location and the inland river ports sheltered the ships from the violence of monsoon winds, storm waves, etc. River-borne trade was seasonal. Trade was also seasonal at the sea ports. Sea navigation in South Asia was shaped by monsoon winds.[14]

Silting of rivers resulted in ports becoming dysfunctional over time in pre-modern India. For instance, Satgaon was a town in Hugli District and a principal port in the sixteenth century. The silting of the channel Saraswati, a tributary of the Ganga, resulted in the decay of this port. The Ganga diverted its main flow to the Hugli river, which previously was a small stream.[15] Pipli near the mouth of the Subarnarekha river in Balasore District of Orissa was a famous port from ancient times till the 1720s. Rapid silting of Subarnarekha

and the formation of sand bars adversely affected the utility of Pipli as a maritime centre from the late seventeenth century onwards.[16] The silted channels on which Sopara and Bolinj stand today were navigable previously. Turumbe (Trombay) and Karanja islands were separated from the mainland by water. The alterations occurred with time due to artificial reclamations aided by the deposits brought by the rivers and streams.[17]

Tirthankar Roy writes that the Indian shipwrights concentrated on building vessels which relied on monsoon winds rather than ocean currents. Most of the ships which plied the Indian coast were small. Local design variations were due to differences in the force of monsoons and the height of tides, etc. For instance, in Bengal, large boats which sailed the Ganga were not suited for the rapid shallow water of the rivers in Chotanagpur. In the latter region, small, flat, clinker-built boats were used. Again, for the narrow creeks of Sundarbans (mangrove forest in the creeks and delta of the Ganga in Lower Bengal), low and deep boats were required. The Indian shipwrights did not respond to the challenges of long-distance voyages. He concludes that the Indian trading system was technically incapable of venturing onto the high seas or embarking on voyages which might take months instead of a few weeks. Hence, most of the ships were smaller than those built in Europe after 1400 CE. And the basic structure of the ships did not change till the arrival of the Europeans in India.[18] Let us assess the validity of the above assertions as far as ship construction and sailing distance were concerned in pre-modern South Asia.

Maritime activities in South Asia during the ancient and early medieval periods

Tirthankar Roy claims that in most of the ancient ports of India, the harbours were makeshift affairs. They were frequently destroyed by storms and then rebuilt quickly.[19] As regards the pre-historic period, the Indus Valley Civilization centred round Mohenjo Daro and Harappa (3000–1500 BCE) maintained maritime linkages with Mesopotamia. The distance between the ports of Sumer and Elam and the ports on the mouth of the Indus and Gujarat is about 1,200 to 1,400 miles.[20] The first tidal dock of the world was probably Lothal (2300 BCE) of the Harappans at Gujarat. The Indus Valley had reed boats for coastal voyages as well as ships with sharp keels, pointed prows with masts and oars.[21] Boat building most probably started earlier in China compared to India. The oar of a small boat was unearthed from Hemudu on the coast of Zhejiang. The date of the Neolithic site of Hemudu could be traced back to around 5000 BCE.[22]

As regards the Vedic period, the *Rig Veda* (probably composed between 1200–1900 BCE) mentions ships. One of the hymns states: 'make a ship whose oars will carry us across; make the weapons ready and set them in place'.[23] Probably, the hymn speaks of a small ship.[24] The *Rig Veda* also speaks of long-distance voyages. One hymn notes: 'As if on a ship sailing through high

water to all horizons of the earth, crossing over all dangers with ease'.[25] The *Rig Veda* speaks of the Asvins with hundred-oared galleys crossing the Arabian Sea and probably the Indian Ocean.[26] The hymns note:

> Turga had left Bhujyu in the cloud of water. ... You brought him back, Asvins, in ships. ... With birds that flew on for three nights and three days you Nasatyas brought Bhujyu to the far shore of the ocean, to the edge of the wetness. ... You did the deeds of heroes in that ocean that has no beginning, no support, no hand hold, when you Asvins carried Bhujyu home after he had climbed on board your ship that has a hundred oar.[27]

Taking into context the material technology available to the Vedic Aryans, we could argue that these ships plied along the coast of the sea but were not ocean-crossing vessels.

As regards China, the first recorded use of riverine warfare occurred in 1045 BCE, when King Wu of Zhou transported 300 chariots, 3,000 men of his personal guard and 45,000 infantry across the Yellow river at Mengjin in 47 ships to attack the Shang capital.[28] With the aid of the Phoenicians, the Persian Great King Cambyses constructed a fleet which transported his army to Egypt in 525 BCE. Darius I, the Achaemenid Emperor of Persia, took interest in promoting sea travel and trade in the Indian Ocean. He repaired the canal of Pharaoh Necho which connected the Nile with the Gulf of Suez and sent the Caryandian mariner Scylax to explore the Indian Ocean.[29] During the time of Alexander's invasion of India, the Arabs conducted trade between the Persian Gulf and the West Coast of India.[30]

The first example of a riverine operation in Indian history is the Macedonian amphibious expedition along the River Indus. The Persians had never ventured east of Attock (now in Pakistan's Punjab). So, Alexander's forays further east added to our knowledge about the human landscape and physical environment of ancient India. Both Megasthenes and Arrian note that the rivers of India are bigger than the rivers in other parts of Asia. Of course, these two intellectuals did not visit or know about China. Among the Indian rivers, the two Greek authors give primacy to the Indus and the Ganga. These two rivers were considered to be bigger than the Nile and the Danube. And Megasthenes affirmed that the Ganga was bigger than the Indus.[31]

When Alexander assembled his fleet at the River Hydaspes (Jhelum), the crews comprised Phoenicians, Cypriots and Egyptians. These people possessed a marine tradition. The officers were Greeks from the Aegean Islands, Ionia and Hellespont, as these Greeks were used to naval affairs. Nearchus of Crete was appointed as the Commander-in-Chief of the Greek river fleet. It was planned that the fleet should sail from Hydaspes to the Akesines and then to the Indus. At that time, Alexander commanded some 120,000 personnel. Craterus was ordered to take command of a body of infantry and proceed on the eastern side of Hydaspes. Hepaestion, with a bigger force of joint cavalry-infantry and 200 elephants, was to move along the west side of

the river. Hepaestion and Craterus were ordered to coordinate their march with the advance of the fleet. At the same time Philip (not to be confused with Philip of Macedon, father of Alexander the Great), who was appointed as the *Satrap* of the region, was sent with a force to the region of Akesines. Alexander himself was with the fleet. When the fleet sailed from Hydaspes to its confluence with the Akesines, it was comprised of 800 vessels. There were some galleys, some barks and transport vessels for the conveyance of the horses and men. The objective was for the fleet to sail to the Gulf of Persia, called at that time the Erythrean Sea. Nearchus commenced his voyage at the beginning of October 326 BCE. While sailing down the Indus, at a place called Stoora, a canal had to be constructed for the fleet to sail. We will see that the Mughals, while conducting amphibious warfare in East India during the sixteenth and seventeenth centuries, had to construct canals occasionally for the passage of their ships along the shallows and narrow bends of the rivers. Further down at Kaumara, the water was brackish. This region was near the Arabian Sea. During ebb tide, the water was mingled with mud. At Koreeftis, there was a bar at the mouth of the river and a great surf beating with much violence outside. Next, the fleet reached the Krokela Harbour and anchored near a sandy inlet. From Krokela, the fleet followed the coast with a mountain called Eirus on their right and an island on their left. Next, they reached the island named Bibacte and anchored in the sheltered harbour there. Nearchus disembarked the soldiers and constructed a fortified camp with stone ramparts as defence against possible indigenous attack. Here, Nearchus stayed for 24 days, possibly because the South-West Monsoon which prevailed till the end of October hampered the passage of his fleet to the Arabian Sea. Next, the fleet sailed along the sandy shore and, after crossing Domae, reached Saranga. From there they sailed to Sacala on the seashore bordering the desert. At this point the fleet was probably cruising along the Makran or Baluchistan coastline. Then, the fleet reached Morontobarbara. The harbour there was deep with a narrow entrance and sheltered from wind. Rocks, gales and violent current were the principal threats to the fleet as it cruised from Punjab to Baluchistan.[32]

During the fourth century BCE, the coastal tract of Kalinga (Orissa) came under the Nanda Empire. Kalinga is the region between the Ganga and Godavari rivers. The Nanda Empire around 300 BCE was replaced by the Maurya Empire. In 261 BCE, Kalinga became a province of the Mauyra Empire. Toshali (Dhauli in Puri District) became the capital of the Mauryan Kalinga Province and Somapa (near Jaugarh in Ganjam District) became the secondary headquarters. The sea ports of Kalinga and the possibility of maritime expansion along the East Coast of India were factors behind the Maurya expansion in Kalinga. Under the Mauryas, the important ports of Kalinga were Tamralipti, Pithunda and Palura (Chatrapur in Ganjam District). During the second century CE, there was a maritime connection between Palura and Gopalpur in the Ganjam District and Malaysia. Pithunda was located on the sea coast between the Godavari and Mahanadi rivers.[33] The

Arthasastra of Kautilya speaks of a naval official called *Navadhyaksa* (Superintendent of the Ships) in the Maurya Empire.[34]

After the collapse of the Maurya Empire, Kalinga became an independent regional kingdom. Kalidasa in *Raghuvamsam* writes that the Kalinga kings were known as lord of the sea. In fact the western portion of the Bay of Bengal was known as the Kalinga Sea.[35] So, we could surmise that the Kalinga Kings maintained a regional coastal navy. Poompuhar was a port town situated at the confluence of the River Kaveri and the Bay of Bengal on the East Coast of India. This port functioned between the third century BCE and the third century CE.[36] The Chinese pilgrim Hiuen Tsang who visited India during the seventh century CE writes about important ports like Tamralipti (Tamluk in Midnapur District of West Bengal), Charitra (Puri), Kangoda (in the Ganjam District) which were active in conducting maritime commerce across the East Coast of India. Charitra (Chitratola/Chitrotpala) was near the place where the Chitrotpala river branches off from the Mahanadi river. Another port was Chandrabagha near Konarak. However, this river port silted up. Among these ports the most famous was probably Tamralipti. We have evidence that, in Asoka's reign, ships from Tamralipti sailed along the East Coast of India and reached Sri Lanka. Under the Gupta Empire (fourth and fifth century CE), copper from the Singbhum District of Bihar was exported through Tamralipti. Around the sixth and seventh century CE, ships from Tampralipti crossed the Bay of Bengal and sailed to Burma and then to the Indonesian Archipelago. In fact, the Chinese visitors to ancient India followed the route through Indonesia, Burma to Bengal.[37]

In respect of ancient China, we know that ships were fitted with sails by around 500 BCE. The sails were made of textiles and in many cases with silk. Cotton became common in China during the Song-Yuan period. Before the twelfth century, common sails were made of woven bamboo mats and were called *peng*. Cotton sails were common in India and cheaper than silk sails. And cotton sails were more efficient than *peng*. The ships used by the Kingdom of Wu were between 30 and 35 metres in length, and each vessel carried about 100 men. In 485 BCE, a Wu naval fleet under Hsu Cheng attacked the coastline of Qi. The famous Chinese naval historian Lo Jung-pang claims that this was the first naval battle in Chinese and probably in East Asian history. Emperor Wu of the Han sent a series of naval expeditions against the neighbouring states.[38] War ships were constructed with an upper deck in China during the Warring States period (475–221 BCE). And during the Western Han era (206 BCE–08 CE), claims Mei-Ling Hsu, Chinese vessels visited Korea, Japan and even Sumatra, Burma, Sri Lanka (Ceylon) and South-East India.[39] In 112 BCE, a naval expedition comprising of more than 100,000 personnel was sent against Nan-Yue. In 42 CE, a naval force of about 2,000 ships was sent against Viet. The Chinese polities' capacity to mobilize human and financial resources to build such massive fleets was impressive by Eurasian standards. However, these Chinese ships were only capable of coastal voyages. Bruce A. Elleman writes that, in the first centuries CE, South and South-East

Asia had ships with better sea-crossing capabilities compared to the ships at the disposal of China. Between the first and third centuries CE, the large ships of South-East Asia were over 200 feet. The decks of these vessels were about 20 to 30 feet high above the water level.[40]

The Roman, Arabian and Persian ships crossed the Arabian Sea and came to Broach on the Gujarat Coast, Muziris (Pattanam) and Nelkunda on the Malabar Coast, and Arikamedu on the Coromandel Coast.[41] Chinese silk yarn reached India and then was shipped through the ports of Barbarican and Barygaza to the Roman Empire. Roman goods like coral and glass entered China through India. The traders involved during the first millennium in the commerce between South Asia and China were Persians and South and South-East Asians.[42] In Japan, coastal ships were constructed during the third century CE. In around 362 CE, Empress Jingo assembled a naval armada in North-West Kyushu. The fleet then crossed the Korean Strait and reached the South-East Coast of Korea.[43] The Chinese state of Liu (420–79 CE) centred around Nanjing and Hangzhou sent a naval expedition against Champa (Linyi) in 446 CE. During the fifth century CE, the ships which sailed in China, South-East Asia and South Asia were capable of sailing across open water for about 80 days without making a landfall.[44] However, as regards South Asia, we do not have detailed accounts of naval battles for this period.

Tirthankar Roy suggests that the Indian rulers employed Roman shipwrights.[45] The text named *Yuktikalpataru* by Bhoja (probably composed around the eleventh century CE) describes the ships used in ancient India. This text emphasizes that iron nails should not be used in the construction of the vessels.[46] This statement is cited by the Western scholars as an example of the cultural naivety of the Indians and their incapability of building big ships for conducting long-distance voyages. The planks were joined by stitches of coconut fibres. However, with violent waves and wind, there was a risk that the twine might break.[47] Ships constructed with planks sewn together with ropes and equipped with a well rigged lofty mast and a big sail were capable of only coastal voyages and crossing the Palk Strait into Sri Lanka.[48] The hull was comprised of planks joined horizontally. The sculptures of Borobodur depict Indian ships in which the horizontal planks were joined to vertical ones serving as ribs, and this provided extra strength to the framework of the ships.[49] Such ships were able to sail from India to Java/Sumatra.

Actually, *Yuktikalpataru* is speaking of both ships for river voyages and vessels which were used for sea voyages. *Yuktikalpataru* speaks of special vessels made of foil of iron and copper. The sides of these ships were wrapped with thin sheets of metal.[50] Bhoja describes ships with one mast (painted blue), two masts (painted yellow), three masts (painted red) and four masts (painted white). Bhoja's text describes the big ships with cabins. These ships were used both for long-distance voyages and naval warfare. Some of the ships had cabins extending from one end to the other of the ship. Such vessels were used for transporting royal treasure, horses and women. The cabins of the royal ships were decorated with leather, canopies and bedsteads. Some

ships had cabins in the middle and some ships had cabins at the front. These ships were used for naval warfare.[51] Radha Kumud Mookerji writes that the ancient and early medieval Indian texts also describe hundred-oared galleys. And some of the passenger ships of Bengal were capable of transporting 700 men each.[52] The Satavahana coins found along the Andhra Coast depict ships with two masts each.[53] The Ajanta Paintings depict ships each with a high stern and three oblong sails and many upright masts. Probably, the ships carried lug sails also. Some of the ships had two decks and ports. One author interprets that these paintings could be dated between 525 and 650 CE.[54] As early as the third century CE, big ships sailed from Bengal carrying horses for the Malay Peninsula and the East Coast of Sumatra.[55] With the emergence of the Sui Dynasty in late-sixth-century-CE China, ships with masts of about 15 metres high and a carrying capacity of 800 men each were constructed. In 605 CE, the Sui Emperor launched a naval expedition against Champa.[56] The ancient Hindus knew about the magnetic properties of lodestone. The Hindu mariners used *machhayantra* (an iron fish which floated in oil and pointed north) as a compass.[57] Towards the end of the Tang Dynasty (618–907 CE), the Chinese mariners started using a compass.[58] The magnetic compass became available to Christian Europe in the late 12th century.[59]

An RNA in early medieval India?

The only power to develop a Blue Water Navy in the Indian case till this date was the Cholas/Colas. The Cholas emerged as a regional power in the first century CE. They ruled over Thanjavur and Tiruchirapally districts. The River Kaveri flows through the Chola heartland.[60] Kavirippompattinam, about 50 km north of Nagai/Nagapattinam (a seaside port along the East Coast of South India and headquarter of the Nagapattinam District), was the capital of the Sangam Age (between the third century BCE and the third century CE) Chola kings. Kavirippompattinam was also a port city. In the early seventh century CE, Nagappatinam was a city fortified with walls and it had a vibrant harbour with a network of waterways near the sea shore. Large ships called *vangam* used to come to Nagapattinam.[61] Kaveripattinam on the Coromandel Coast and Nagapattinam, the two port towns, were hubs of overseas commerce in the Chola domain. Kaveripattinam had a big colony of foreign merchants.[62]

The Cholas became both a continental as well as a maritime power between the tenth and twelfth centuries. Rajaraja (r. June/July 984/985–1014) followed the policy of creating an overseas empire. Initially, Rajaraja clashed with the Chera ruler Bhaskar Raja Varman (978–1036). The Cheras were the dominant power on the Malabar Coast. An anti-Chola alliance comprising of the Pandyas, Cheras and Sri Lanka came into existence.[63] The Pandyas had ships with two masts each.[64] The Cholas and the Pandyas clashed over the pearl fisheries of the Gulf of Manar/Mannar and Madurai.[65] In 989, the Chera fleet was attacked at Kandalur and then the Chera port Villnam was

sacked.[66] Next, the Cholas turned their attention towards Sri Lanka. Pearls from the Gulf of Manar, which were in high demand in China, was probably one of the reasons behind the Chola expansion in Sri Lanka.[67] The Indian mercenaries hired by the rulers of Sri Lanka to strengthen royal authority frequently rebelled and caused further instability on the island.[68] Political fluctuations enabled the Cholas to intervene in Sri Lanka. The Lankan ruler Mahinda V who ascended the throne in 981 CE faced a military rebellion and escaped to Rohana, the hilly region south-east of Sri Lanka. Rajaraja led an amphibious expedition and landed at Sri Lanka. The Chola force sacked the Lankan capital Anuradhapura. The Cholas annexed the northern half of the island and converted it into a province. The Chola provincial capital was Polonnaruva.[69] King Mahinda, the ex-ruler of Anuradhapura, was taken prisoner and deported to Tanjore.[70]

K.G. Krishnan writes that Nicobar Island was captured by the Cholas as the first stage for the big project of launching a naval expedition against Kadaram/Sri Vijaya/Sriwijaya.[71] In 1007 CE, Rajaraja boasted that he controlled 12,000 islands (probably including the Andamans and the Lakkhadip/Laccadiv/Lakshadweep Island chains, as well as the Maldives). The Lakshadweep group was comprised of some 36 islands near the South-West Coast of India. Most of these islands are oriented in the north–south direction, except the Androth, which is in the east–west direction. Most of these islands are enclosed by lagoons with coral reefs on their western side. The lagoons are shallow with a maximum depth of 16 metres and the shallowest is 2 metres. Coral sands and gravels comprise the sea bed of these islands. Most of these islands are low levelled and flat topped with a height of less than six metres above the sea level. Most of these islands are elongated and irregular in shape. In the first century CE, the Roman ships while visiting India touched the Lakshadweep Islands.[72]

Rajaraja died in 1014 CE and was succeeded by his son Rajendra (r. 1012/14–44). R.C. Majumdar writes that Rajendra Chola sent a naval expedition to Kadaram/Kataha/Kedah around 1017–18 CE. A bigger maritime expedition was launched in 1025 against Katha-Srivijaya.[73] During the 1025 expedition, the Chola Navy raided about 12 port cities in the Malay Peninsula, Sumatra and the Nicobar Islands.[74] Hermann Kulke notes that the main Chola invasion of Sri Vijaya occurred in 1025 and another smaller expedition was launched in 1070.[75] Tansen Sen says that Rajendra Chola sent two expeditions against Sri Vijaya: one in 1017 and a bigger one in 1025.[76]

The Tamil merchants from present-day Tamil Nadu frequented Kadaram.[77] There was a Tamil community also in the south Chinese coastal city named Quanzhou.[78] Besides the Tamil traders, merchants from Gujarat (Lata), Kerala, Andhra Pradesh and Tamil Nadu also operated in the Chola Empire.[79] The Indian overseas traders probably supplied guides to the Chola maritime invasion force. Suryavarman, the ruler of Kamboja (Cambodia) was threatened by the expansion of the Sailendra Kingdom of Kataha (Kedah in Malay Peninsula). The Sailendra King was Mara-Vijayottunga-Varman, who

ascended the throne after 1005 and started following an expansionist policy in Malaya. According to one author, the Sailendra Kingdom also expanded into Indonesia. The Sri Vijaya Kingdom made moves to dominate West Java. So, the ruler of Kamboja appealed to the Chola monarch and the latter sent a naval expedition against the Sailendra Kingdom. The Sailendra King was captured along with his treasures and elephants.[80] Trade war may be a factor behind the Chola maritime invasion. While South India used to export cotton textiles, Song China exported ceramics.[81] Sri Vijaya's ships visited China. Sri Vijaya exported camphor, gold, silver, aloe woods and turtles and imported porcelain, cotton and silk clothes.[82] A Chinese source mentions that Sri Vijaya attempted to block direct maritime links between the Cholas and the Song Empire (960–1279 CE). Sri Vijaya forced the foreign ships to stop at their sea ports. If any foreign ships refused, the Sri Vijaya's Navy destroyed those ships.[83] The powerful Sri Vijayan Navy controlled the Sunda and Malacca Straits and thus shaped the dynamics of Near Eastern and Indonesian trade with China.[84]

In terms of scope, the Chola intervention in Sri Vijaya was a break with its past naval operations. The Chola invasion of Sri Lanka involved crossing a distance of between 50 and 150 kilometres. However, the naval expedition to Sri Vijaya involved crossing a distance of between 800 and 1,000 kilometres.[85] In comparison, William the Conqueror in 1066 CE crossed the English Channel during late September with only 10,000 men and 3,000 horses. William the Conqueror's fleet comprised between 700 and 3,000 ships.[86] Polonnaruva, which was the principal administrative centre of the Cholas in Sri Lanka, situated on the eastern coast of the island with the important harbour of Trincomalee, along with ports in the Nicobar Island played an important role in Rajendra's naval campaign against Sri Vijaya.[87] Vijay Sakhuja and Sangeeta Sakhuja write that the Cholas had no specialized war vessels.[88] During emergencies, the ships were taken out of trade and modified for purposes of war. However, it must be remembered that no navy in the world before at least circa 1300 had specialized naval combat vessels. The ships of the Cholas which were used for invasion of Ceylon and South-East Asia were capable of carrying 1,500 personnel each.[89] We know that Sri Vijaya Kingdom had many walled cities and the Chola maritime expeditionary force stormed them.[90] One can speculate that, besides elephants, the Cholas also used other tools of siege warfare in assaulting Sri Vijaya's cities. According to a Chinese text, the Chola ORBAT was comprised of elephants supported by soldiers with small shields comprising the front rank. Behind them were deployed successive ranks of infantry equipped with lances, long swords and archers. The provisions of the Chola soldiers were comprised of baked or steamed cakes made of rice and wheat flour.[91] The rations for the mariners of medieval West Europe were *biscotti*, which was a type of hard-baked bread that supplied calories for men expected to row for long periods. In addition, the European mariners also received pork, beef, wine, salted or dried fish, dried peas, beans, salt, onions and garlic. At the beginning of the sixteenth

century, dried peas and beans along with rice were provided in order to make soup for the European mariners.[92] Some of the Chola ships carried war elephants and others had infantry soldiers dressed in short-sleeved jackets and loincloths armed with bows and spears.[93] The Chola soldiers were dressed in cotton garments which were manufactured at Tanjore (Uraiyur) and Madurai.[94]

The big transport ships of the Cholas remind one of the parallel with the Ming Admiral Zheng He's (1371–1433/1434) treasure ships. The treasure ships were about 400 feet in length with nine masts and carried 600 men each. In the early twelfth century, Chinese ships of more than 30 metres in length with nailed hulls and multiple masts, and with a carrying capacity of over 100 tons and a crew of 60 men each, were sailing across the seas surrounding China.[95] As early as the era of Five Dynasties (907–60 CE), the Chinese ships were using flaming oil fired from the canisters in naval encounters.[96]

The Chola maritime power-projection under Rajaraja and Rajendra could be compared with the Ming Empire's (1368–1644) naval power projection under Yong Le Emperor and Zheng He/Cheng Ho. By all means Zheng He launched bigger expeditions and sailed over greater distances than Vasco da Gama.[97] Zheng He was definitely a bigger figure compared to Vasco da Gama. Between 1405 and 1433, the Mings launched seven overseas expeditions. At that time, Portugal was conducting naval explorations along the Moroccan Coast. One of the Ming overseas expeditions comprised 300 ships and 28,000 personnel in contrast to Vasco da Gama's four ships with 170 men, which visited Calicut at the end of the fifteenth century. Zheng He's fleet had about 180 medical personnel. Zheng He's 40 supply junks which carried rice and water for the personnel were bigger than da Gama's ships. The largest vessels in Zheng He's fleet were the treasure ships which were between 1,500 and 3,000 tons, while da Gama's ships ranged from 70 to 300 tons.[98]

Two continental polities (China and India) for a brief period in their history engaged in establishing overseas empires. But both powers after a certain period scrapped their ocean-going navies. And, even now, India, a rising power, and China, slated to become world's superpower in the mid-twenty-first century, lack Blue Water navies. China at present can only project naval power in the South China Sea (excluding Taiwan, which enjoys US support) and does not possess aircraft carriers and long-distance maritime aircraft to shape the maritime strategic environment of South-East Asia. At least in the sea, the present Indian case is a bit better. The Indian Navy possesses ageing aircraft carriers and long-distance maritime aircraft which enable Delhi to project power at least as far as Singapore. The maritime lobby in India is arguing (one can argue in the tradition of the two Chola monarchs) that national security demands that the Indian Navy should control the Malacca Straits (the eastern choke point of the Indian Ocean). India controls at present the Andamans and Lakkhadip Islands, and exercises indirect power over Sir Lanka and the Maldives. The Chola invasion of Sri Lanka can be compared with Indian Prime Minister Rajiv Gandhi sending the Indian Peace Keeping

Force to Sri Lanka. However, unlike the Chola Navy, the present-day Indian Navy is not dominant in the Central Indian Ocean due to the presence of US air-naval-marine elements at Diego Garcia.

Besides unique national reasons behind the scrapping of Blue Water navies of these two continental states, there were some general factors also, which explains why pre-modern China and India could not sustain their overseas naval activities. Both the Ming and the Chola empires derived their principal income from land revenue. Maritime overseas trade was of marginal importance in the Chola political economy. There was no business enterprise/community involved which pressurized the Ming and Chola court to retain their ocean-going navies for supporting long-distance overseas trade. In other words, there was no political-economic imperative, unlike in the case of Western maritime powers of the early modern era, to establish and maintain the overseas empires. The Ming Dynasty's power projection in the Indian Ocean was mostly the product of political ambition of the world's strongest man: Yong Le Emperor. And in the case of the Cholas, the overriding political ambitions of two most powerful monarchs who were also father and son, Rajendra and Rajaraja, were responsible for the outburst of long-distance naval activities. Once these powerful figures were removed from the political scenario, then, in the absence of a structural economic imperative, the Ming and Chola ocean-going navies were stymied.

Both the Chola and the Ming naval enterprises were partly hobbled by the fact that these two continental powers faced mortal threats along their land frontiers. This resulted in the transfer of scarce military and financial assets to strengthen the land army. One has to remember that Philip's Spain and Louis XVI's France exhausted themselves in attempting to follow expansionist policies both on land and sea. The Ming Empire was threatened by the steppe nomads (Manchus). Geographical luck, unlike with the Cholas and Ming China, allowed Elizabethan Britain to escape any mortal threat along its land frontiers. Take, for instance, the Cholas. The Pandyas of Madurai remained a thorn for the Cholas. In 966, at the Battle of Cevur fought at the south of Sevali Hills in Pudukkottah, the Chola Emperor Parantaka II Sundara (r. 956–73) and crown prince Aditya defeated and killed the Pandyan monarch Vira Pandya.[99] In 992, at Rodda in Anantpur District, Tailapa II, the Western Chalukyan ruler of Kalyana, defeated Rajaraja's army and captured 150 elephants. Tailapa II died in 997 and was succeeded by his son Satyasraya. In January 1005, Satyasraya sent his Brahmin General Bayala Nambi to capture Vengi. In 1006, Nambi advanced to the Guntur District. In response, Rajaraja sent a force under his son Rajendra to attack the Western Chalukyan home territory in western Deccan and another detachment to contain Nambi. A decisive battle was fought near the Unukallu Fort. Though the Western Chalukyas were defeated, they were not destroyed. The Western Chalukyas retired from Vengi but retained their hold around the Tungabhadra river.[100] Besides extensive maritime conquests, Rajendra Chola also carried out conquests on land. On the land, the Chola Army under Rajendra not only took a

defensive posture but also carried out offensive strategic campaigns. Rajendra led an army and defeated Mahipala, the Pala ruler of Bihar and Bengal. Rajendra's army reached the River Ganga and, to commemorate this victory, he built a new capital known as Gangaikonda Cholapuram.[101] In 1021, the Chola Army again clashed with the Western Chalukyas at Vengi. The Chalukyans were defeated but conducted an orderly retreat with their force intact. The Cholas, though victorious, had suffered heavy casualties. In fact, the Chola General Brahma Maharaja himself died on the battlefield. Rajadhiraja I, who came to the throne in 1043–44 after his father Rajendra I, tried twice in his reign to destroy the Western Chalukya power but failed. In 1044–45, Rajadhiraja with a large army arrived before the Dhannada Fort on the River Krishna. In the ensuing battle, the Western Chalukyan relieving army was defeated. Then, Rajadhiraja set fire to the fort and advanced to Kollippakkai. Here, in 1046, the Western Chalukyas were able to defeat the Chola invading force.[102] However, in 1052, the Cholas took revenge when Rajadhiraja burnt the Chalukyan capital Kalyana.[103]

In the first decade of the twelfth century, the Cholas had to confront the Hoysalas. In 1112, the Hoysala General Gangaraja attacked the Chola *Samanta* Adiyaman, who was in charge of Gangavadi. At the Battle of Talakad, the Cholas were defeated.[104] Due to disturbances in the core, the Chola overseas empire also started breaking up. The Sinhalese King Vijayabahu in around 1055 CE attacked Polonnaruva held by the Cholas.[105] Parakramabahu, the Singhalese King, conducted an attritional campaign against the Cholas in the 1170s. He constructed cantonments of soldiers and shipyards on the East Coast of Sri Lanka near Palk Bay at places like Urattirai, Pulaichcheri, Matottam, Vallikamam and Matival.[106] In 1226, the northern part of the Chola territory was attacked by the ruler of Orissa.[107] The Chola Empire vanished in 1261 with the rise of the Pandyan Kingdom, and Cholamandalam (core of the Chola homeland) later came to be known as the Coromandel Coast. Long before the destruction of the Chola Empire, the Chola Navy had gone into hibernation because of the continuous demands of attritional multi-front land warfare. Nellore and Kanchi, the two core provinces of the Chola Empire, were annexed to the Pandyan Kingdom in 1263.[108]

To sum up, one could argue that both the Chola and the Ming empires engineered a naval RMA, but it could not be sustained. In terms of the technology of shipbuilding, neither the Ming nor the Chola ships represented a revolutionary break with the past. The naval vessels which they used were emerging slowly through many centuries in their respective countries. Further, no revolutionary weapons were used on either the Chola or Ming ships. So, the term MTR cannot be used in explaining these two cases. The real breakthrough came in the sphere of political will which enabled these two empires to project power across the Indian Ocean. Political ambition of Rajendra and Yong Le triggered off massive mobilization of manpower and existing designs of naval assets, which enabled overseas power projection. There was only minor support from the merchants' guilds for the Chola naval programme.

There is some evidence about the merchants honouring the Chola soldiers for their brave deeds.[109] In the absence of any structural economic imperatives, the naval RMA merely based on aggressive political ambition of the rulers could not initiate a long term Naval/Military Transformation as regards the foundation of a Blue Water Navy in the cases of China and India. And when the overambitious political figures of these two empires were removed, the overseas project fell through and continental strategies came to the fore in these two countries.

Shipping in medieval India

Susan Rose writes in the context of medieval Europe that there were little if any structural differences between ships engaged in warfare and those engaged in trade.[110] In contrast, Richard W. Unger asserts that the separation between fighting vessels (warships) and cargo vessels in Europe occurred not in the sixteenth century but in the medieval period.[111] The Vikings used longships. As carriers of goods, the longships were less efficient compared to the cogs with their bulky hulls and low length-to-breadth ratio. The sailing capability of the cog was improved by addition of a keel. This allowed the vessel to deal with heavy seas and high winds. Further, in the naval battle, the high freeboard of the cog provided an excellent platform for hurling missiles.[112]

The medieval European naval combat vessel especially in the Mediterranean was the galley. In the Mediterranean world, the galley was inherited from the Romans. In the thirteenth century, the introduction of the great galley made the light galley exclusively a fighting vessel. In North Europe, sailing ships were used as cargo vessels and rowed vessels were used for fighting.[113] According to John Law, a galley was primarily a war vessel. To reduce water resistance, it was long and thin. The Venetian galley was about 125 feet long and 22 feet wide including the outriggers. The bow was low and pointed in order to ram the hostile ship. It carried about 125 to 150 men. There were three oarsmen on the bench and between 25 to 30 oars on each side. The vessel also had one mast well forward with a lateen sail. The ship was steered with the aid of two rudders and after 1300 with a single rudder attached to the sternpost. The last-mentioned innovation was introduced from North Europe.[114] The galley was unsuitable for long-distance ocean voyages. The accommodation of the oarsmen and the stores necessary to feed them took up a lot of space and limited the operating range. Further, the galley with great banks of oars required great length in proportion to beam and freeboard. This design in a wooden construction made the vessel too whippy to sail in choppy seas with safety. The galley was suited for coastal warfare on the inland Mediterranean Sea.[115]

In 1123, at Askelon, the Fatimid Navy was defeated by the Venetian Navy which was comprised of large merchant ships and galleys equipped with 'cats' (modified mangonels and ballistae). The 'cats' were used to launch stones and flaming liquid. The Venetian galleys also rammed and sunk the Fatimid

ships.[116] During the thirteenth and fourteenth centuries, in the Mediterranean, shooting by the crossbowmen in the galleys, and then grappling and boarding, decided the fate of naval battles.[117] Rose tells us that the crossbowmen had an advantage over the light Muslim bows in the encounters which occurred between the Islamic and Christian naval forces in the Eastern Mediterranean.[118] After boarding, hand-to-hand fighting in the castles and on the decks characterized battles on board the galleys. The naval marines were equipped with javelins, lances and daggers, and wore leather jerkins.[119] The naval mariners wearing leather jerkins were more nimble and effective than the knights covered with heavy armour during combat on board the ships. Rose tells us that, in the fourteenth century, the French used fire ships in naval encounters.[120] In the fourteenth century, amphibious warfare in the Baltic involved the use of cogs (for carrying victuals and naval stores) and other small crafts.[121]

The Indian Ocean was dominated by the Arabian dhows and Chinese junks. The Arab dhow was a stoutly built wooden ship of about 200 tons. It had a deep keel, a long grab bow and a continuous sheer from the bow to the break of the poop. The hull was fastened with iron nails and caulked with coconut fibre. In the big dhow, there was a double bottom and the space was filled with lime and crushed coral, which functioned as a sort of hard cement. The dhow had two masts with a pronounced forward rake. Each mast carried a single lateen sail (a triangular sail, the leading edge of which was laced to a long yard hoisted obliquely to the mast). The heel of the yard was secured to the deck.[122]

The medieval period in Indian history is characterized by the eruption of Islam in South Asia. To fight the Arab and Central Asian invaders, the Hindu polities required war horses because the climate and terrain of India are not suited for breeding good quality horses. Horses from Arabia and Persia especially from the port of Hormuz were imported to Gujarat by the Gujarati merchants.[123] Some of the cargo ships which plied between Bengal and Sri Lanka during the seventeenth century were of 500 to 600 tons each. These vessels, like the Chola ships, carried elephants in their cargo holds.[124] For naval combat, medieval Kerala used snake boats. Each boat was about 125 feet in length and carried 100 oarsmen. Such a boat was characterized by speed and it had a bronze spur attached to its prow for ramming the hostile ship. One author claims that the latter innovation was due to Roman naval influence.[125] The Raja of Calicut (known as Zamorin, which was a hereditary title) established control over the Nilambur Forest, which had the best variety of teak. For fighting along the coast and also along the rivers, Calicut constructed ships of about 350 to 400 tons each at the harbour in the village of Beypur.[126] Calicut's capital was Calicut town. The majority of the population were Hindu and the rest were both local Muslims as well as settlers from Hormuz, Cairo, Abyssinia and Tunis. Overseas foreign trade was in the hands of the Muslims.[127] Some Arab merchants settled on the Malabar Coast as early as the seventh century CE. One such group was the Marakkars who became senior marine officers of the Zamorins.[128]

In the thirteenth century South Indian ships visited China for trading purpose.[129] The Indians constructed their ships by the rabetting method, while the European shipwrights used caulking. Caulking was a technique of making the joints or seams, especially the junctions between the edges of the planks, waterproof by putting oakum between parts which were not tightly fitted. Oakum was made of loose fibre or untwisted old ropes mixed with melted pitch. Caulking was carried out after the planks were joined by the carpenters. The Indians in contrast smeared the planks with pitch or tar and lime. This prevented any fissures and also protected the timber from sea worms. Fish oil was also smeared on the planks. This method made the seams leakproof and was cheaper than the caulking technique. Even the British factors in the second half of the seventeenth century did not argue that the Indian method wàs inferior compared to caulking. The Indians joined the planks of the ships, writes Ahsan Jan Qaisar, by stitching or sewing them with ropes rather than using iron nails. The Indians used teak for constructing ships. Teak was good and capable of taking iron nails. However, the stitching material which was derived from coir was cheaper than iron nails. Sturdier ships with iron nails would have been required for crossing the Cape of Good Hope. However, the Indians and the Arabs were not interested in that direction.[130] The point to be noted is that, before the introduction of copper sheathing, European ships constructed with oak and elm planking below lasted for a lesser time period compared to the Indian teak-built ships.[131]

Cables, straps and coconut coir required for manufacturing them were imported from the Maldive Islands. The Maldive Islands exported coconut and cowries to India.[132] Thomas Bowrey writes:

> They have an excellent way of making shrowds, stays, or any other riggings for ships. They, for the most part, make them of good twine, which is here as cheap as coarse hemp unspun is in England, and when laid with Europe tar prove most serviceable.[133]

Narsapuram (Nursapore) was the most northerly town on the Coromandel Coast. This town was some 45 miles north of Mechilipatnam. Besides Narsapuram flowed the Narsapore river which was navigable for several miles above the town. Good quality timber (teak wood) was available in this region. This town was famous as a ship-building and ship-repairing centre till the second half of the seventeenth century.[134]

The Indians used stone anchors. Grapnel-type anchors have been recovered by the marine archeologists from the coast of Gujarat. Most of the anchors are made of porous limestone and basalt. The upper section of some of the anchors is circular with a smooth surface. All the anchors have an upper circular hole. The maximum length of the basalt rock anchor is 142 centimetres, weighing 175 kilogrammes, and the smallest one is 90 cntimetres, weighing 125 kilogrammes. Most of these anchors were chiselled from an elongated prismatic shape of basalt rock. The biggest anchor found at Bet Dwarka

measures 190 centimetres in length with an estimated weight of 283 kilogrammes. A group of Indian archeologists argue that introduction of larger boats from the eighth century CE onwards for longer voyages across the sea resulted in the invention of a new type of stone anchors which were different from the traditional composite type. The new anchors were able to hold the vessel firmly in the water. Grapnel anchors were long and heavy and made of fine raw materials compared with the composite anchors of the Mediterranean maritime space. The Arab traders introduced grapnel anchors in the Indian Ocean. Though it was a dual-use technology (used for civilian shipping mainly) it could be categorized as an MTR. These anchors gave better grip in the sandy and rocky sea bed. Grapnel anchors being very strong were not easily broken when thrown or lifted into the sea. Again, grapnel anchors occupied little space compared to other types of anchors. At several times, grapnel anchors were reused as mooring stones. Each ship had a main anchor which was the heaviest of all the anchors. Overall, the grapnel anchors remained in operation in India from the eighth to the fifteenth century.[135] The Indians relied on rhumb lines or loxodromes for marine navigation. At night, the sailors took bearings with respect to the celestial features (especially the Polar Star) and during the day used visual landmarks on the coastline, wind direction and the position of the sun to speculate about their location. The fifteenth-century Arab navigator Ahmad Ibn Majid noted that the Gujaratis and the Cholas were able to calculate the latitudes. Navigation was also aided by compass cards which were diagrams with directional information derived from constellations, wind and sun.[136] Besides maritime operations along the sea coasts, during the later medieval era, continental polities of South Asia conducted complex land-river joint operations which were an important aspect of pre-modern amphibious warfare.

Mughal riverine warfare

Trim and Fissel write that in the pre-modern era amphibious operations were more important compared to the modern era. This was because medieval and early modern roads were few and poor in quality. And the ocean-going ships were also comparatively small with sufficiently shallow draught, which enabled them to enter far inland via the rivers. As a result, merchandise and war materials were dispatched by sea and river wherever possible. Artillery trains were almost totally dependent on waterborne transport.[137] Trim continues that, before the introduction of the combustion engines, riverine transport was preferred to terrestrial transport because even when roads of good quality existed, boats carried a larger volume of goods than the animals. Water transport was cost-effective and expeditious. Rivers were arteries of the pre-modern world and their networks were further amplified by the lakes through which rivers flowed and which were their sources. All these, including the canals associated with the rivers, constituted the fluvial system. Further, inland waterways connected to the great corridor of commerce and

communication: the sea. All these observations apply to the marshy, swampy, river-infested, jungle-covered mountainous terrain of East and North-East India. In East and North-East India, the Mughals conducted what can be categorized as inland amphibious warfare. Inland amphibious warfare centred round rivers, canals, marshes and lakes. In contrast, inshore amphibious warfare is carried out on the seaward side of the ocean–continent divide. They take place close to the shore. However, Trim cautions that in practice many inshore waters are the estuaries of rivers, or lagoons, and there is no clear-cut distinction between high sea, inland waterway and inshore waterway. Trim emphasizes that all merge into each other. He attempts to merge these two varieties of amphibious operations into one broad category. And he defines amphibious operations as those in which waterborne forces not only transport ground forces but always operate in close proximity to the shore and the bank.[138] Taking into consideration Trim's observations, I have termed inland amphibious operations as riverine/river-based operations because the land and waterborne forces in the context of Mughal operations in East and North-East India operated only along the rivers and not on the sea coasts and certainly did not involve crossing of the sea/ocean.

Bengal and Assam were criss-crossed with a large number of rivers, marshes, swamps, lakes and islands. The depths and courses of the rivers changed with the onset of the annual monsoon rainfall. Further, the topography of North Bengal and Assam was characterized by jungle-covered hills. And the Mughal cavalry was unsuitable for operating in this region. Various types of boats were used for plying along the monsoon-fed rivers of Bengal, which occasionally changed their courses. Bajra was a big heavy boat which had sails and covered rooms. It could carry many men and much equipment and was suited for wide, big rivers. Jalia was a long narrow boat which could move with or without sails. Chhip was a small narrow boat which could move fast. It was suited for narrow rivers and winding creeks.[139] And the kusas were long rowing boats.

The opponents of the Mughals in Bengal were the Afghan chiefs (Lohanis, Qaqshals, etc.) and some Hindu zamindars. In Assam, the principal opponent of Mughal expansionism was the Ahom Kingdom. The original inhabitants of Assam are the Bodos. In the thirteenth century, bands of hill men (Ahoms) entered Assam and settled in the eastern end of the Brahmaputra Valley. These invading hillmen were an offshoot of the Tai or Shan race. The original homelands of the Shans were western Yunnan and Upper Burma. They conducted both a military invasion as well as a gradual process of colonization. Some intermingling between the Ahoms and the Brahmin pundits and Kshatriya princes resulted in the introduction of Hindu rituals and customs among these hardy hillmen.[140]

Meanwhile, the Mughal Empire was expanding in the eastern direction. Babur had campaigned for a short time in Bihar. The Afghans driven out from North India took shelter with the Husain Shahi Sultan Nasir-ud-din Nusrat Shah (r. 1519–32) of Bengal. Babur marched against the Afghan

Sultanate of Bengal and defeated the Afghans at Ghagra in 1529. Thus, Tirhut came under Mughal control. And Humayun made a foray into Bengal during his conflict with Sher Khan. The capital of the Bengal Sultanate was Gaur, which covered 20 square miles and was fortified with a rampart, moat and massive gateways. Ghiyas-ud-din Mahmud Shah (r. 1533–38) was defeated by Sher Khan and the former escaped from his capital Gaur and took refuge with Humayun.[141] However, serious Mughal engagement with East India started under Akbar in the 1560s. In 1568 CE, with the death of Mukunda Deva, the last ruler of the Gajapati Kingdom, Orissa came under Muslim rule. Sulaiman Khan Karani (r. 1565–72), the Afghan ruler of Bengal and Bihar, attacked Orissa. Puri, Cuttack and Balasore were conquered by Prince Bayazid. Conflict with the Afghans of Bihar and Bengal brought the Mughals into Orissa. The Mughal presence in Orissa started from July 1576.[142]

On 8 August 1574, the pursuing Mughal force overtook the retreating Afghans at the Keul river, some 14 miles from Daryapur (Mokamah in Patna District in Bihar). A few elephants from the Afghans were captured, but the Afghan chieftain Gujar Khan was able to cross the river with most of his force and he fled back to Bengal. Akbar gave command to Munim Khan Khan-i-Khanan to chastise the Afghans of Bengal. Munim, with 20,000 cavalry and a large river fleet, decided to advance to Tanda. As an incentive to serve in the marshy lowlands of Bengal, the Mughal soldiers and mariners drew three to four times their ordinary pay. In order to strengthen the motivation of Munim, Akbar assigned a *jagir* (which extended from Patna to Teliagarhi) worth 20 crores of *dams* annually to him. Towards the middle of August, Munim Khan resumed his advance. The two Afghan strongholds in East Bihar, Surajgarh and Mungher, surrendered without offering any resistance. From Mungher, the Mughal force pushed through Bhagalpur and Khelgaon towards Teliagrhi. Teliagarhi was a pass in the Santhal Pargana District in Bengal lying between the Rajmahal Hills in the south and the Ganga in the north. The pass was defended by an Afghan garrison under Ismail Khan. On 2 September, Munim Khan captured Teliagarhi. Towards the end of September, Munim Khan appeared near Tanda (Tanra) in Malda District in North Bengal. Tanda was made capital of Bengal under Sulaiman Kararani in 1564 in place of Gaur. Daud Khan did not attempt to defend his capital but fled towards Orissa. Meanwhile, the Afghans concentrated at Ghoraghat (at Dinajpur). At Ghoraghat, the principal Afghan *sirdars* were Sulaiman Mankali and Babu Mankali. Meanwhile, Daud Khan Karrani gathered a force of 60,000 strong at Kasiari. Munim Khan sent the Rajput *mansabdar* Raja Todar Mal and Muhammad Quli Khan against Daud. The combined force of these two Mughal generals reached Midnapur in early December 1574. Later, Munim Khan himself joined the Mughal force advancing against Daud. On 3 March 1575, at Tukaroi, Daud's force clashed with the Mughals. Tukaroi was a village on the left bank of Subarnarekha, some six miles west of Jaleshwar. The Mughal artillery opened up. Then the Mughal van attacked and, due to its rapid advance, it got separated from the

main Mughal force. Gujar Khan's elephants defeated the Mughal van under Khan-i-Alam. Then, Gujar Khan attacked the Mughal *altamash* under Qiya Khan and scattered it. To an extent, Gujar Khan's elephant charge was reminiscent of Hemu's elephant charge against Tardi Khan's Mughal Army before Delhi. Next, Gujar Khan's frontal assault threw the Mughal centre into confusion. Munim Khan himself was wounded. When it seemed that the Mughals were on the point of being defeated, a chance arrow struck Gujar Khan. Again, the scene was reminiscent of the Second Battle of Panipat when a chance arrow struck Hemu, who was on the point of being victorious. At this point Daud lost heart and retreated to Cuttack.[143] Thus we see that, in this battle, artillery was not so effective against elephant charge and luck played an important role in shaping the dynamics of the battlefield.

After the death of Munim Khan in October 1575 CE, panic broke out among the Mughal officials posted in Bengal. They retreated towards Bhagalpur in Bihar. Daud Khan came out from Orissa and Isa Khan from East Bengal (now Bangladesh) and jointly defeated the Mughal flotilla under Shah Bardi.[144] The principal opponent of the Mughals under Akbar in Bengal was the Afghan chieftain Isa Khan, the chief of the Bara Bhuyias (12 chieftains). His capital was Sonargaon, which was two miles from the Brahmaputra creek in the Dacca District. At the height of his power, Isa Khan controlled Dacca, Mymensigh, Tippera, Sylhet and the 22 *Parganas*. Thus, Isa Khan's domain included present-day Bangladesh and the south-eastern part of West Bengal State in India.[145] In 1576 at the Battle of Rajmahal, Daud was defeated and executed by the Mughals. However, Isa Khan remained a thorn in the side of the Mughals.[146] The Mughal Navy made another attack under the new commander Khan-i-Jahan but was defeated by Majlis Dilawar and Majlis Qutab. Khan-i-Jahan retreated to Sihhatpur near Tanda and died there on 19 December 1578. Muzaffar Khan Turbati was appointed as the *Subadar* of Bengal in 1579. On his staff, there was a Mir Bahar who was in charge of the fleet. However, the Mughal military officials posted in Bengal rebelled against the centralizing efforts and strict auditing practice introduced by Turbati. Turbati was killed by the rebel Mughal officials on 19 April 1580. This gave the opportunity to Isa Khan and Kedar Roy (Hindu zamindar of Bikrampur in Dacca District) to increase their power. With the aid of the Portuguese mercenaries, Kedar Roy also established an ordnance factory in his domain, and Isa Khan built up a powerful riverine navy.[147]

In 1582, Akbar appointed Khan-i-Azam as *Subadar* of Bengal. The Mughal troops stationed in Awadh (Oudh/present-day Uttar Pradesh State in India) and Bihar were ordered to aid the Bengal *subadar* to establish authority over the province. On 24 April 1583, the Mughal and rebel fleet which had come from Faridpur clashed with each other near Teliagarhi. The commander of the Afghan fleet and Kalapahar (a noted rebel general who was a Hindu convert) died of gunshot wounds. The Qaqshals of North Bengal shifted their loyalty to the Mughals. The rebel leader Masum Khan fled to Isa Khan. Meanwhile, Mughal reinforcements under Shahbaz Khan came from Patna.

And the Mughal fleet also hired the Portuguese mercenaries for the naval artillery branch. Shahbaz captured Sonargaon and Katrabhu, a principality of Isa Khan. Then, Shahbaz Khan advanced along the River Lakhia and captured Egarasindur. The military outpost at Egarasindur was situated at the Egarasindur Village in Kishoreganj District on the eastern bank of the Brahmaputra, opposite Tok. In the tenth century CE, a Koch chieftain constructed this fort. In 1357 Sultan Sikandar Shah repaired the Egarasindur Fort. The fort was encircled by a mud wall which was 60 feet wide at its base. The wall was surrounded by a moat on the western side and by the river on the other three sides. To consolidate his control and to prevent ingress of the rebels, Shahbaz constructed a fortified base at Tok on the western bank of the Brahmaputra river. Isa Khan returned from Cooch Behar (North Bengal) and took command. With the onset of the rainy season, the level of the rivers in East Bengal rose. One night, Isa Khan's soldiers cut the embankments of the Brahmaputra at 15 places. As a result, Shahbaz's camp was flooded. Abandoning most of his equipment, Shahbaz retreated in total discomfiture, first to Bhawal and then to Tanda. Isa Khan captured Sayyid Hussain, the Mughal *Thanadar* of Dacca (Dhaka). Isa Khan passed away in 1599.[148] In October 1603, Kedar Roy of Bikrampur died fighting the Mughals.[149]

When Jahangir Quli Khan died, the *subadarship* of Bengal was given to Islam Khan (*Subadar* of Bengal, 1607/8–13). Ihtimam Khan was appointed as the Mir Bahr. On 30 June 1607, Islam Khan proceeded to Bengal with a fleet, elephants, cannons and musketeers. Emperor Jahangir sanctioned the use of a part of the imperial artillery stationed at Agra for the use of Islam Khan. From Rohtas Fort, Islam Khan took a number of cannons for further strengthening his artillery branch.[150] Rohtas is on the bank of the Son river in the Shahabad District of Bihar. This fort was originally built by a Hindu prince named Rohitaswa.[151] The new *subadar* had at his disposal some 330 pieces, including *gajnals*, *hathnals* and *shir dahan*. The last term signified a type of cannon with the mouth shaped like a tiger. From Allahabad, the war boats were gathered. As the fleet was sailing down the Ganga, two boats carrying melons for the personnel were seized by the pirates (Gawars of Chajuha). The pirates were equipped with bows and arrows and muskets. However, Mirza Nathan, son of Ihtimam Khan and author of the principal text (named *Baharistan-i-Ghaybi*) dealing with Mughal amphibious activities in Bengal and Assam under Jahangir and Shah Jahan, defeated the pirates. Nathan's detachment enjoyed artillery superiority over the pirates.[152]

In 1605, when Akbar died, Osman/Usman Khan, a chieftain, gathered 20,000 of his followers and declared himself an independent ruler. Raja Man Singh previously had confronted Usman on the bank of the Banar river in the north-east corner of Dacca District. Usman ruled over parts of lower Bengal. In 1607, Usman crossed the Brahmaputra and killed the imperial official Sajawal Khan who was in charge of Alapsingh Thana. The Mughal *Thanadar* Baz Bahadur Qalmaq was also killed by Usman. Islam Khan sent his brother Shaikh Ghiyasuddin who reoccupied Alapsingh. Alapsingh was a *pargana* in

the Mymensingh District in present-day Bangladesh. Usman retreated beyond Brahmaputra. Usman finally died fighting the Mughals later in Sylhet. Islam Khan decided to march to Bhati after the end of rainy season and punish Musa Khan and the rebellious zamindars.[153] All the Mughal officials who had retreated to Bengal *Suba*'s capital Akbarnagar from their outlying posts after the death of Jahangir Quli Khan were ordered back to their posts. In order to strengthen the elephant corps, Iradat Khan sent some of his officers from Bihar to Orissa to acquire some elephants. When the men of Iradat Khan were bringing the elephants back from Orissa, the animals were attacked by some rebellious Afghans. The Mughal imperial official Raja Kalyan marched against them and defeated the rebels. The rebels, after being defeated, fled back to the jungles, and the elephants were sent to Hashim Khan at Cuttack. From there, these beasts were sent to Islam Khan.[154]

After reaching Akbarnagar, Ihtimam Khan held a review of the river fleet. He commanded 295 boats and, of them, 70 were designed for carrying cannons and munitions.[155] Akbarnagar or Rajmahal was situated on the western bank of the Ganga, about 20 miles north-west of Gaur in the Malda District in North Bengal. Raja Man Singh changed the name of the place from Rajmahal to Akbarnagar. In 1608, the capital of Bengal *Suba* was changed by Islam Khan from Rajmahal to Dacca/Dhaka. Dacca became the capital of Bengal again under the *subdarship* of Prince Shuja, son of Emperor Shah Jahan. The Mughal fleet stationed in Bengal entered the River Ichhamati near Dakchara in the district of Dacca on 11 July 1608. Meanwhile, Islam Khan was advancing slowly towards Dacca fighting the rebel zamindars.[156]

Said Khan, the *Shiqdar* (Revenue Collector) of Chiliajuwar *Pargana* was attacked by Mirza Mumin and Madhav Rai, the zamindar of Khalsi. The rebels commanded 200 war boats, 400 cavalry and 4,000 *paiks*. The Mughal garrison was defeated. A reinforcement of 300 cavalry and 1,000 infantry under Shahbaz Khan was sent to Chilia. On the orders of Islam Khan, Mirza Nathan and Raja Satrajit (the ruler of Bhusna who had submitted to Mughal authority) captured elephants for military use at Nazirpur. Ihtimam Khan, with the fleet, was stationed at Shahpur. After the conclusion of the *kheda* (elephant branch) operation, Islam Khan marched to the bank of the River Atrayi, opposite the *Thana* of Shahpur.[157]

In the middle of September 1613, after the death of Islam Khan, Qasim Khan was appointed as the *Subadar* of Bengal. On 6 May 1614, Qasim Khan reached Dacca, the capital of Bengal *Suba*. Shaikh Ibrahim, an imperial official, misappropriated a sum of Rs 700,000. Afraid of being caught red-handed, he with 3,000 of his followers rebelled and contacted the Raja of Assam for aid. The Raja of Assam agreed to aid him against the Mughal Army with war boats and soldiers. Further, the Raja also held out the carrot of the territory of Kamrup and Manchabat to be awarded to Shaikh if he fought his erstwhile Mughal master.[158]

The regional kingdom of the Ahoms in Assam was on an expanding spree. Both the Ahoms from Brahmaputra Valley and the Mughals from Bihar-Bengal

were bound to clash against each other over the Assam–Bengal boundary running across North-Bengal, Bhutan, Sikkim and Cooch Behar. The Ahom Kingdom was divided into two divisions by the Brahmaputra river (Tsang po of Tibet). The region north of the Brahmaputra was known as Uttar kul and the region south of the river was known as Dakhin kul. The capital was called Kuhhata (Gauhati/Guwahati). The Naga tribes (of present-day Nagaland) accepted the suzerainty of the Ahom King but did not pay any tribute. Assam was famous for elephants, gold and silk. The principal crops were rice and betel leaves.[159]

In June 1606, the Ahom King Pratap Singh (r. 1603–41) sent a contingent up to Kallang, Raha and then to Kopili to bring the Kacharis into tributary status. The Ahom Army moved from Hanan to Satgaon and defeated the Kacharis at Dharamtika, capturing many guns, swords and spears. The Kacharis retreated to Maibong, leaving a garrison in the fort situated at the junction of the Kopili and Maradoyang rivers. The Ahom assault on this fort failed. In October, Pratap Singh sent a fresh contingent to the Dhansiri Valley. The Ahoms occupied and fortified Demalai. A strong Ahom garrison was kept at Raha under Sunder Gohain. The Kachari struggle continued under Bhim Darpa, the Kachari King's eldest son. The other players in the scenario were Raja Parikshit of Eastern Koch Kingdom and the Mughal *subadar* of Bengal.[160]

Mirza Yusuf was sent by the imperial authority with the joint command of river fleet and a ground contingent to secure the fort at Pandu. Baldev, the brother of Raja Parikshit, with a force of 18,000 hill men, attacked the Pandu Fort which was garrisoned by Mirza Yusuf Barlas and other officers of Mirza Nathan. The Mughal matchlock men continued to fire till the supply of gunpowder and lead was exhausted. Then, Baldev's men advanced their trenches to the bank of the ditch of the fort. Mirza Nathan went to Ghiyas-ud-din and ordered him to march immediately to relieve Pandu. The Bengal *Suba*'s Admiral Islam Quli was also ordered to advance with his fleet to provide succour to the defenders of the fort. Some 200 matchlock men were sent to Pandu. Meanwhile, Baldev's men, equipped with cannons and rockets, attacked with great vigour. When Mirza Nathan's reinforcements reached Pandu, the garrison launched an assault on the besieging force. Baldev was forced to raise the siege and retreat.[161]

In 1615, Qasim Khan, *Subadar* of Bengal decided to launch a punitive expedition against the Ahoms. Sayyid Hakim and Sayyid Abu Bakr were put in charge of the combined operation. They commanded 10,000 cavalry and infantry (numbers not known) and 400 ships. Satrajit, the son of a zamindar near Dacca, who had fought Parikshit was also sent with the Mughal force and the *subadar* promised to make him the *thanadar* of Pandu and Gauhati. The Mughals advanced along the Kallang river and reached Kolibar. The Ahoms confronted the Mughals at the mouth of the Bharali river. However, the Mughals took advantage of a fog and were able to ferry their cavalry across the river. In the ensuing confrontation, the Ahoms were defeated. However, another Ahom force reached Bharali. The reinforced Ahoms launched a

sudden night attack (their favourite tactic) and killed many Mughals. The Mughal commander Abu Bakr was also killed and a large amount of booty fell into the hands of the Ahoms. According to one author, some 5,000 Mughals were killed, 9,000 were wounded and 3,000 deserted. Probably, these figures included combatant and non-combatant casualties. Bali Narayan was installed as tributary Raja of Darrang and was given the title Dharma Narayan. His capital was on the south bank of the Brahmaputra within Darrang. As a result of this disaster, Qasim Khan was removed from the *subadari* of Bengal.[162]

In November 1617, Pratap Singh with an army advanced towards Hajo. He was accompanied by Dharma Narayan. The Raja of Dimaura submitted to Pratap Singh. The Dimaura Raja was a tributary of the Kacharis and ruled over Jaintia District, which was inhabited by some 18,000 people. Pratap Singh attacked and captured Pandu. The Mughals were again defeated at Agiathuti and retreated to Hajo. The Mughal commander Abdus Salam requested aid from the Mughal *subadar*. The *subadar* from Dacca sent his brother Muhi-ud-din with 1,000 cavalry, 1,000 matchlock men and 200 boats and sloops. Meanwhile, Pratap Singh's force made an all-out assault on Hajo. While the Ahoms launched a frontal attack on the fort, the rear attack was carried out by the auxiliaries under Dharma Narayan and Jadu (a Kachari chief). The Ahom assault, however, failed and they retreated to Srighat. The Mughal force closely pursued them. Burha Gohain was taken prisoner. Many Ahom ships and guns were captured by the Mughals. Pratap Singh ordered his force to assemble at Samdhara. Langi Panisiya, who had distinguished himself during the disorderly retreat of the defeated Ahom troops, was appointed as Bar Phukan in charge of the territories west of Kalibar by the Ahom King. The tracts east of Kalibar were put underthe charge of the Ahom King's uncle Mamai Tamuli. In September 1619, the Mughals besieged Dharma Narayan in his fort on the south bank of the Brahmaputra. The Ahoms sent a relieving army. For six weeks, the two armies faced each other. And then a battle occurred in which the Mughals were defeated. The Mughals lost 10 cannons, 50 light guns and lot of baggage animals. The Mughals fled back to Hajo. In 1635, a Mughal force advanced towards Harikesh, but the Ahoms defeated it near the Bharali river. Pratap Singh with 10,000 *paiks* entrenched himself on the bank of the Kulsi river. Next, Hajo was invested. The Mughal force was defeated and lost some 360 guns. Abdus Salam, the Muslim commander at Hajo, requested reinforcements from Islam Khan, the Mughal *Subadar* of Bengal. Islam Khan sent Sayyid Zain-al-Abidin with 1,000 cavalry, 1,000 matchlock men and 210 ships. The Mughal fleet was ordered to advance up to Srighat. In the first battle west of Pandu, the two Ahom fortified camps were taken and they lost four ships and some cannons to the Mughals. Next, the Mughals besieged Srighat.[163]

In June 1660, Emperor Aurangzeb (r. 1658–1707) appointed Mir Jumla as *Subadar* of Bengal and ordered him to capture Cooch Behar, Assam and Arakan. The Mughal-Ahom Treaty of 1639 gave western Assam, i.e. the territory

from Gauhati (now Guwahati) to the Manas (Manaha) river to the Mughal Empire. Civil War among the sons of Emperor Shah Jahan from 1657 onwards and the absence of Crown Prince Shuja (*Subadar* of Bengal) with the Bengal naval flotilla to fight his brothers in Bihar had weakened Mughal hold on North Bengal and West Assam. A warlord of Cooch Behar named Bhavanath Karji declared independence. Taking advantage of the situation, the Ahom King Jayadhwaj Sinha ordered Bargohain Tangchu to attack the Mughal dominion. Mir Luftullah, the Mughal *Faujdar* of Gauhati escaped to Jahangirnagar without offering any resistance. In response, Aurangzeb ordered Mir Jumla to reestablish order in North Bengal and to chastise the Ahoms.[164]

Mir Jumla's plan was first to capture Cooch Behar and then advance into Assam and finally capture Arakan. The Ahoms took Mir Jumla's preparation seriously. The Ahom *Buranji* notes: 'The Muslims got many swords, cannons, bows, arrows, horses, cows, buffaloes, daggers, ... flint guns, gold, silver and many other things.'[165] In 1661, Mir Jumla sent a force under Raja Sujan Singh and Mirza Beg Shujai to punish the vassal ruler of Cooch Behar. In June 1661, Sujan Singh was stopped at Ekdur/Ekmook and the onset of monsoon rainfall resulted in suspension of all military operations. Ekdur was fortified with lime and brick and surrounded by deep pits and dense jungle. On 1 November 1661, Mir Jumla and Dilir Khan with 12,000 cavalry (including some Armenian horsemen) and 30,000 infantry supported by 323 ships began the invasion of Assam. The most powerful ships were ghurabs equipped with cannons. Each ghurab had 14 guns and a crew which varied from 50 to 60 personnel. Each ghurab was towed by four kusas. Most of the naval officers in the Mughal river fleet in Bengal were Dutch, Portuguese and British. Some of the sailors were Dutch and the rest were mestizos (offspring of Portuguese and Indians). Among the Mughal naval personnel, a Russian/Muscovite contingent was also present. While the Dutch were conscripted by the Mughal government, the British and the Portuguese were volunteers.[166]

From Baritala, Mir Jumla decided to advance through an unguarded jungle track criss-crossed with *nalas*. The Mughals had to construct a road by cutting through the jungle. The Raja of Cooch Behar escaped to Bhutan, and Mir Jumla captured the capital on 19 December 1661. The arsenal at the capital of Cooch Behar yielded 123 muskets, 11 Ramchangis and 140 *zamburaks*. Cooch Behar was annexed to the Mughal Empire and the name was changed to Alamgirnagar. A Mughal mint was established in the city. And the fortification at Ekdur was demolished.[167]

As ealy as 1661, Mir Jumla had sent a detachment under Rashid Khan to Assam. Rashid reconquered Kamrup as far as Rangamati and then waited for Mir's advance from Cooch Behar. The Ahom king executed two of his courtiers, Dihingia and Lahui Phukan, for their failure to stop the Mughals at Kamrup. The new Ahom general appointed in charge of defence was Manthir Bharali Barua. Jogigupha, at the mouth of the Monas river, was strengthened and a new fort was constructed at Pancharatan on the opposite bank of the Brahmaputra.[168]

On 4 January 1662, Mir Jumla started his march towards Assam. Lack of topographical knowledge on part of the Mughals and absence of co-operation from the local zamindars of Assam as regards supply of provisions and guides hampered the Mughal advance and caused hardship to the troops. Mir Jumla decided to follow the course of the Brahmaputra river. Dilir Khan, the commander of the Mughal Advance Guard and Mir Murtaza, Chief of the Imperial Artillery, were ordered to cut a path along the river bank. The thick and strong Khagra reeds were crushed and then uprooted by the elephants and men. All this fatigued the musketeers and foot archers. Mud further slowed the march of the cavalry. The daily rate of march of the Mughal Army was about four to five miles. On 17 January Mir Jumla halted five miles west of Jogigupha, a fort at the junction of Monas and Brahmaputra. Most of the Ahom river forts were made of mud. The western environ of the Jogigupha Fort was defended with *panjis* (short and stout bamboo stakes fixed inside the soil) and pits. In the nineteenth century, the Nagas and the Burmese also used *panjis* against the British and Indian troops. The north of the fort was covered with pits, hills and jungles. Mir captured the fort on 20 January. After the naval battle at Kalibar, on 9 March 1662, the Mughal fleet comprised 159 kosas, 50 patellas, 48 jalbas, 24 palwars, 10 ghurabs, 10 khatgiris, five mahalgiris, seven parindahs, four bajras, two salbs, two balams, one palil, one bhar, etc. Some boats carried provisions and munitions and a few the *harem* of the Mughal nobles.[169]

In 1663, Rashid Khan was able to capture the two Ahom forts, named Hathisala and Dhubri. Cholera broke out among the Ahom force and some 12,000 men died of this disease. In the pre-modern era, disease was a greater killer than combat as far as the armies were concerned. As the Ahoms regrouped around the Manaha river, the Mughals advanced along the Brahmaputra. The Ahoms garrisoned the forts of Manaha and Haraighat. Some 30,000 Mughal infantry laid siege to Manaha Fort. In the sphere of hand-held firearms, the Mughal infantry had an advantage over the Ahom infantry. Gunpowder superiority enabled the Mughals to capture Manaha Fort. The Mughals made a night attack (unlike the Rajputs of medieval India) and were able to capture Beltala.[170] Then, the Mughal advance fizzled out.

In December 1667, Aurangzeb decided to launch another expedition against the Ahoms. Ram Singh of Amber, a Rajput *mansabdar* of 4,000, was ordered to lead the invasion of Assam. The expeditionary force comprised 4,000 troopers of Ram Singh, 1,500 *ahadis*, 500 *barqandaz* (imperial gunners), 30,000 infantry, plus contingents of 21 Rajput *sirdars*. In total, 20,000 cavalry accompanied the invasion force. Further, a levy raised in Cooch Behar, which numbered 15,000 archers and infantry, also functioned as auxiliaries. The physical geography of Assam was not suited for a cavalry operation. Worse, Ram Singh had only 40 ships. Compared to the number of ships present during Mir Jumla's invasion, the small number of ships available to Ram Singh hobbled the prospect of success from the very beginning. Ram Singh reached Rangamati, the frontier garrison town, in February 1669. Leaving a

contingent at Rangamati for safeguarding communications with Bengal, the Mughals advanced along the North Brahmaputra Valley and reached Sualkuchi in April 1669. Next, Ram Singh captured the territories west of the Manaha river, captured two Ahom posts at Chenga and Tapera, and then occupied Hajo without a fight. Then, Ram Singh advanced up to the Bar Nadi river. The Ahom General Lachit Barpukhan followed the policy of evacuating the region west of Hajo and luring the Mughals into the Gauhati (now Guwahati) defensive zone. The objective was to buy time to complete defensive preparations around Gauhati and to fight the main battle away from the frontiers into the interior of Assam. At Gauhati, the Mughals would be at a disadvantage as their LOC stretched back to North Bengal. In contrast, the Ahoms would be closer to their core areas. The Ahoms concentrated on strengthening the defensive positions around Gauhati. Sand embankments were constructed along the Brahmaputra to prevent landings of Mughal troops in the ships from the river. The Ahoms avoided any direct confrontation with the firepower-heavy, numerically superior Mughal force. The Mughals sat down for a costly attritional warfare in the Gauhati defensive zone. During June–July, due to heavy rain, the Mughals were forced to retreat. The Mughal Army retreated from Agiathuti to Hajo and then the Mughal fleet withdrew from the Hajo river to Sualkuchi about six miles west of Pandu. During August–September 1669, the Mughal ships carrying 16 cannons each attacked the river stockades of the Ahoms. However, the naval attack was unsuccessful. The Ahoms started *dagayuddha* (guerrilla attacks) which wore down the Mughals. Parties of Ahom soldiers would suddenly swoop down from the jungles during the night and attack the Mughals and then retreat back to their forest hideouts. Atan Burhagohain on the north bank of the Brahmaputra was put in charge of organizing the raiding parties.[171]

The failed Mughal invasion of Ram Singh shows that not gunpowder but the terrain and climate of Assam and the political will of the Ahoms were the driving factors shaping the nature of riverine warfare. Ram Singh's expedition also reflected the fact of the unlearning of certain lessons of amphibious warfare by the Mughals. In all the previous encounters, the Mughals had used a larger number of ships and boats for accompanying their ground force. Ram Singh's lack of an adequate navy showed that this particular Mughal expedition was undertaken in a half-hearted manner. Ram Singh's lack of an adequate river navy was partly because of the Rajput culture of warfare which focused on cavalry encounters on land. Further, Aurangzeb's *durbar*, for political reasons, did not back Ram Singh fully. And also, due to religious affiliations, Ram Singh was not very eager to destroy a Hindu kingdom.

Use of terrain and climate as exemplified by Isa Khan against Shahbaz decided victory/defeat in a campaign. Overall, combat in North-East India was different from the nature of combat in the plains of North India and the arid plateau of North-West India. In North-East India, cavalry and heavy artillery were mostly irrelevant. Light infantry and river boats equipped with cannons were the dominant weapons shaping warfare. Elephants as logistical

vehicles rather than camels and mules were of prime importance for moving through jungles, *nullahs* (small streams) and river banks. For most of the time, the advance of the armies followed the course of the rivers. River warfare also involved construction of forts and attacking the enemy-held forts. Most of the forts in Bengal and Assam were built with mud and they controlled the choke points of rivers, tributaries, canals and moats. In North and Central India, the Mughals like their predecessors, constructed forts with stones. However, paucity of stones in East and North-East India encouraged the Afghan Sultanate and the Ahom Kingdom and later the Mughals to construct riverine forts with earth. However, it would be erroneous to think that earthen forts were easy to capture by the besieging armies. Massive earthen walls strengthened with brickworks were able to absorb shots fired by siege artillery. One example from East India would suffice. The Hajiganj River Fort was constructed at a point where the old Buriganga river flowed into Sitalakhya at Khijirpur (Hajiganj) in Narayanganj. This fort is about 16 miles from Dacca city. The plan of the fort is hexagonal. The fort has circular bastions at the corner. The bastions mounted cannons. The wall and bastions are crowned with big merlons which are pierced with musket loopholes. Most of the gun platforms face the river because, due to road-less jungle terrain, the besieging armies mostly came by river boats.[172]

It is to be noted that earthen fortification was not unique to early modern India. Alessandro Farnese, the Habsburg Governor of the Low Countries during the late sixteenth century, was a fortification expert. He asserted that modern ramparts of required height and thickness could be constructed with rammed earth without the brickwork *camicatura* (outer skin which protected the earthworks from the ravages of weather). And, in the Low Countries, siege warfare was most advanced. Construction of earthworks for fortifying cities and citadels was a cheaper option, and earthworks were able to absorb cannon shots. Giovanni Battista Belluzzi in the 1540s, with timber, brushwood and earth, constructed ramparts. Such ramparts were able to mount heavy guns also. However, regular maintenance work of the earthwork fortifications was required to prevent waterlogging of the interior due to constant rainfall.[173] It is to be noted that East and North-East India was a zone of high rainfall, but regular maintenance work could have been carried out due to vast demographic resources at the disposal of the Indian polities.

The forts constructed in East and North-East India were river forts controlling the waterways. In Kautliyan term they were *jaladurgas*. There were many river forts around Dacca. Dacca was able to command the major water routes. Under Shaista Khan (Mughal *Subadar* of Bengal), the river fort of Dacca which guarded the passage across the Buriganga river had ramparts equipped with big cannons. Most of the guns were turned towards the rivers to check pirates.[174] Monsoons obstructed war making in North-East India during the rainy season. Campaigns were conducted in monsoon season in North-East India only in 1944 with the availability of sophisticated technology.

Towards the end of Aurangzeb's rule, the Mughals also clashed with the Magh Raja (ruler of North Burma). Chittagong in present-day Bangladesh constituted the westernmost outpost of the Maghs. Chittagong is the tract between Bengal and Arakan. At Jagdia, there was a Mughal outpost. Beyond it and the Chittagong Port was a mountainous jungle tract. The River Feni rises from Tipperah Hills and flows through Jagdia. There were about 99 wet *nalas* (dry shallow streams) between Feni and Chittagong. In order to reach Chittagong from Dacca, one had to cross six creeks by boat and the big river Sripur.[175]

A Persian account describes the Arakan Kingdom in the following words:

> The fort of Chatgaon is an appurtenance of the kingdom of Arakan, which is a large country and great port of the east. One side of it is enclosed by high hills which join the mountains of Kashmir, China, Cathay, and Mahachin. Another side is bordered by the ocean. Deep rivers and wide oceans enclose the western side, which adjoins Bengal. The land and water routes alike for entering the country are very difficult.[176]

About the Chittagong Fort, the *Talish* continues:

> On the bank of Karnafuli river are some hills, high and low, situated close to each other. The lower hills have been heaped over with earth and raised to the level of the higher ones; all these hills have been scarped cylindrically, fortified. ... its towers are high.[177]

The moat surrounding the Chittagong Fort was deep. It was eight yards wide. Close to the edge of the ditch flows the Karnafuli river. The hills surrounding the fort are high and covered with almost impenetrable jungle. Every year the Raja of Arakan sent to Chittagong 100 ships full of soldiers and artillery munitions with a new governor. After unloading the stores, the previous governor returned to Arakan.[178] Duarte Barbosa in 1518 provides an account of the Arakan Kingdom in Burma. This kingdom bordered on Bengal in the west and Pegu/Ava in the east. Arakan had one good seaport known as Mayajerji. There was a strong fortress near this port. Arakan engaged in a limited amount of overseas trade and the kingdom produced a large amount of cotton textiles and grain. The army of Arakan was comprised of infantry, horses and elephants. The latter were acquired from the interior of Burma.[179]

The land force of the Magh Raja was centred round 500 big elephants. No horses were available in Arakan.[180] The Mughal chronicler had high regards for the Arakan armed forces' military effectiveness. The *Talish* notes that the Arakanese had lot of cannons and their navy was quite strong. The Arakanese Navy was comprised of ghurbas/ghurabs, jalbas, khalus and dhums (which were larger than ghurabs). These ships were made strongly with timber with a hard core so that the balls of *zamburaks* and small cannons could not

pierce them.[181] From the 1540s onwards, Portuguese mercenaries who had contacts with Goa found a space in the volatile political atmosphere of Arakan. These mercenaries also imported firearms into the kingdom.[182] The Raja of Arakan used the European mercenaries to pillage and plunder Bengal.[183] In the 1660s, the annual expenditure on the Mughal Flotilla in Bengal came to about Rs 1400000. In December 1664, on the orders of Shaista Khan the *Subadar* of Bengal, some 300 ships were constructed for the Bengal Flotilla. The vessels were constructed at the ports of Dacca, Hugli, Baleshwar, Murang, Chilmari, Jessore and Karibari. The Dutch merchants of Bengal were ordered to aid the Mughal naval building programme and, in case of non-cooperation, were threatened with stoppage of their trade.[184]

Overall, one could argue that the Mughals in the one-and-a-half centuries between circa 1550 and circa 1710 initiated a Naval Military Transformation centred round river-based amphibious warfare. Gunpowder weapons originally developed for use on land were modified for use on board the river crafts. Further, the Mughals integrated infantry (modified as naval mariners), cavalry and elephants in their gamut of force structure geared for 'joint' river and land warfare. In addition, landlords and indigenous chieftains along with the *mansabdars* were also integrated within the Mughal force structure, which was oriented for conducting river-based water and coastal operations in East and North-East India.

Both the Cholas and the Mughals used ships for carrying horses and elephants. The Cholas ferried them over sea and oceans and the Mughals along the rivers. However, we have no evidence that the Indians, unlike the Europeans, manufactured specialized vessels for carrying war animals. Bernard S. Bachrach in an article opines that West Europe was deficient as regards the knowledge required for constructing special horse-carrying ships from which combat-ready horses could be launched. Such ships were an integral component of amphibious warfare. Bachrach goes on to argue that the technology of such vessels emerged in the Byzantine Empire in the seventh century CE and then spread through Italy and the Normans of Sicily to the Normans of West Europe.[185] In the second half of the eighth century, the Byzantine Empire used small oared warships each of which carried 12 horses. During the ninth century, the Venetian horse transporters were two-decked vessels. William of Normandy's transport ships (1066 CE) which carried horses unloaded the animals through ramps or the horses jumped through the low gunwales into the shore. In the twelfth century, William of Tyre's horse-transport ships had large openings at the stern with bridges for loading and unloading the animals. In the thirteenth century, the Crusaders' horse transport ships (round vessels with sails) had horse ports at the sides of the ships (probably at the quarters). During the fourteenth century, Venetian medium-sized round ships utilized masts and pulleys to rig temporary lifting devices in order to haul cargo (probably also horses) aboard from the lighters. The Venetian lighters were flat-bottomed vessels with shallow draughts. In the early seventeenth century, each horse ship with a capacity for 20 animals had a door in the

poop which could be opened and closed. Lillian Ray Martin concludes that medieval West Europe had two types of transporters: large round ships with sails and oared ships. In the oared transport ships, horse ports were probably above the waterline. A horse port on the stern of the ship created a structural weakness in the vessel. This structural weakness was mediated by larger deck beams and the addition of strong timbers.[186] Rose informs us that, in the fourteenth century, for transport of horses, gangplanks were used to get the animals on board the ships, and stalls in the hold provided with rings and staples for holding the horses inside the hull of the ships.[187] Now we turn the focus from amphibious operations to naval operations in the oceans of the early modern world.

West European maritime intrusion in South Asia

John F. Guilmartin, Jr. asserts that West Europe experienced four discrete Military Revolutions at sea which occurred sequentially at times and in parallel with each other. The net result was the construction of maritime empires by the Western powers in the non-Western regions. The first revolution occurred in Iberia, which resulted in the fusion of Mediterranean and Atlantic ship-building technologies in the early fifteenth century. This gave rise to the caravels and full-rigged ships. Portugal and Spain reaped the benefits of this revolution. The second revolution occurred roughly in the 1510s and was initiated by the Venetian shipwrights. The result was heavy gunpowder-equipped galleys. The third revolution concerned the galleon towards the end of the sixteenth century. It aided the rise of British naval power at the expense of the Spaniards. And the fourth revolution involved the rise of ships of the line from the galleon. The last revolution also triggered a revolution in state building. And the revolution in state taxation sustained the fourth Naval Revolution.[188] In the context of West European naval warfare, Geoffrey Parker asserts that Elizabethan England initiated a Naval Revolution by launching the dreadnought. From 1573 onwards, the queen's shipwrights initiated a revolution in ship-platform design. The big gunship of the Tudor era had a 700-tons displacement and 31 tons of ordnance. In terms of manoeuvering capacity and firepower, the British battleships had no equal in the world. By 1596, the British battleship fleet emphasizing heavy ordnance was the most powerful fleet in being on the planet earth. By 1610, the Royal Navy deployed a 1,900-ton battleship. And these floating vessels gave England its naval supremacy.[189]

Louis Sicking writes that the invention of a gun port was a crucial component of a Revolution in Naval Warfare. He continues that gun ports made possible the introduction of heavy artillery below decks so that enemy ships could be destroyed without boarding. Guns thus replaced armed men on the ships at sea. Sicking is actually emphasizing an MTR. But for Sicking this MTR has wider consequences. He continues that in the early modern era the infantry became the queen of the battlefield in the armies of West Europe.

And at the same period, due to the introduction of gun ports to the West European ships, infantry at sea became unimportant. This in turn aided the rise of infantry and navy as separate branches in the West European states.[190] So, an MTR was triggering, according to Sicking, a managerial revolution in the military organization of the states. Basically, Sicking is emphasizing Guilmartin's fourth Military Revolution at sea. Actually, Guilmartin's four Military Revolutions of the sea could also be categorized as four MTRs. These four MTRs might have generated an RNA in West Europe. Similarly, Parker is overemphasizing an MTR as a Naval/Military Revolution. The English 'dreadnoughts' did not have much utility in the Indian Ocean. We need to evaluate the effectiveness of the RNA of early modern Europe on the seas and oceans outside Europe.

One could argue that the arrival of Vasco da Gama at Calicut on 20 May 1498 started a new era in the Indian Ocean. This process of marine expeditions in the Indian Ocean indirectly started in 1415 when the Moroccan city of Ceuta was conquered. The Maderia and Azores islands were settled by the Portuguese in the 1420s and the 1430s. In 1434, Cape Bojador was rounded. In 1488, Bartolomeu Diaz rounded the Cape of Good Hope. In July 1497, Vasco da Gama's small fleet left Lisbon for the east. The Portuguese King at that time was D. Manuel (r. 1495–1521).[191]

Vasco da Gama came to India with four ships: S. Gabriel (flag ship), S. Raphael, Berrio (also named S. Miguel) and a supply ship under Captain Guncalo Nunes. Berrio was a caravel. K.D. Madan writes that Gabriel and Raphael were baramels, which were square-rigged vessels. Though a baramel was slower than a caravel, the former offered greater safety and comfort to the seamen.[192] Till the mid-fifteenth century, the Portuguese used small square-rigged vessels which were similar to the Mediterranean merchantmen. The caravel came into existence in 1440. The lateen sails on these ships were copied from the Arabs.[193] Raphael and Gabriel were between 100 and 150 tons each, and the supply ship was somewhere between 200 and 300 tons. Each ship started with supplies designed to last for three years. The provisions included biscuits, wine, vinegar, oil, rice, cheese, beef, pork, lentils, sardines, salt, sugar and water. Further, the crew supplemented their rations by catching fish wherever possible.[194] According to one calculation, in a hot climate an oarsman required two litres of water.[195] The naval crew was equipped with cross bows, spears, swords, axes and javelins. They did not have hand-held firearms. The officers were clad in steel armour and the privates wore leather jerkins. However, the ships carried guns and mortars. The ships for navigational purposes carried wooden and metal astrolabes, compasses, sounding bars, hour glasses, Zacuto's compilation of tables for measuring latitude by observing the altitude of the sun and an equinoctial compass. The latter had a sun dial and a magnetic needle which enabled Vasco to determine the time of high tide.[196] From 1456 onwards, the Portuguese used quadrants. A quadrant was used to measure star altitude and thus determine the latitude. From the 1480s, solar observations and sophisticated tables improved the West European mariners' ability to measure the latitude.[197]

The first naval encounter between the Portuguese and the Indians seems to prove the theory of an RNA on part of the West Europeans. Vasco wanted the Zamorin (hereditary king) of Calicut to banish all the Muslim traders from Calicut.[198] Naturally, the Zamorin did not agree and this resulted in conflict between Portugal and Calicut. In September 1498, the Zamorin sent 70 war boats to pursue the Portuguese flotilla of three ships under Vasco da Gama. The Portuguese fleet was sailing towards Angediva. Eight of the Zamorin's ships confronted the Portuguese caravel Berrio. The Zamorin's ships, sewn with coir, were equipped with men armed with bows, lances, spears and javelins, and the caravel's bronze guns were able to demolish these ships.[199] The Portuguese under Vasco da Gama also found out that the ships of Mozambique like the Zamorin's ships were big, but the planks were held together not by nails but by coir rope. But, the African ships' sails were made of palm matting. However, the Mozambique mariners possessed mariner's compasses and nautical charts.[200] The caravel was of 100 tons' capacity, while carrack and galleon were larger, usually from 300 to 800 tons' capacity. The galleon was a sailing ship usually with four masts, with a hull long for its beam, straight and flat and with a beak head low down. Galleon first emerged in Venice and was the product of fusion of galley and round ship. The carrack was a sailing ship with three masts introduced into North Europe from Italy around the fifteenth century. The Italian shipbuilders introduced a square stern from the shipbuilders of North Europe.[201] In addition, Portuguese naval supremacy in the Indian Ocean during the sixteenth century also involved the use of naus. A nau is a large, three-masted vessel built like a barge with a tall central mast and high castles constructed at each end. Vasco da Gama's nau carried six guns on the deck, two on the poop and two which fired in the forward direction, and eight falconets. The larger nau which came into existence carried 50 cannons. Malyn Newitt writes that some of the big guns in the larger naus functioned as broadsides. So, the big nau functioned as a floating battery. During long oceanic voyages these guns were stowed below. And this custom continued till the seventeenth century.[202] Till the eighteenth century, the West European ships sailing in the Indian Ocean used lead ingots as ballast.[203]

Besides better ships, Portuguese seamanship was also probably superior compared to the seamanship displayed by the Indian mariners. This was due to several factors. Seigneurial revenues from land were falling in Europe in general and in Portugal in particular. The crisis of feudalism pushed the younger sons of the poor nobility to search for alternative livelihoods. An overseas empire provided them with glory, knighthood and even land and riches. The search for fishing grounds in the North Atlantic provided maritime training. About 80 per cent of Portugal's population were peasants. Though 65 per cent of Portugal remained cultivable, only 25 per cent of it was under acreage. And this percentage held till the nineteenth century. Agriculture remained stagnant. The mass of the peasants were unaffected by monetization and market forces. Portugal had to import grain. One of the

principal motivations behind overseas expansion was to search for land in North Africa and in the islands where grain could be grown. The Portuguese nobility comprised some 20,000 people and was internally fragmented. D. Manuel was able to reduce the power of nobility and establish a bureaucratic mercantilist state. In circa 1600, the population of India was about 150 million. And, of them, 110 million lived in the Mughal Empire. Portugal's population by contrast was about 1.5 million. All these factors partly explain how a small and poor country like Portugal with a small population[204] was able to establish a maritime empire in the early sixteenth century stretching from the East Coast of Africa to the Indonesian Archipelago.

Military technological diffusion occurred among the Indians quite quickly. Carlo M. Cipolla asserts that, during the second half of the fifteenth century, Sultan Mahmud Beghra of Gujarat used artillery in the ships.[205] However, it is a different matter whether such gunpowder weapons were used properly or not during the naval encounters. Vasco da Gama spent the time between May to October 1498 off the South-West Coast of India. Vasco da Gama returned to Lisbon in August/September 1499, but he soon returned to the East. In March 1500, Cabral, with a fleet of 13 ships and 1,200 men, left Lisbon. The ships for India actually sailed from the suburbs of Lisbon on the Tagus river.[206] In early February 1503, the Calicut fleet comprised 20 large vessels, 40 smaller crafts known as sambuks and several thousand Muslims and Malabar crew equipped with firearms. The armada was under the joint command of two Muslims: Cojambur and Koja Casim. Here, we see that the Calicut fleet, under military pressure, was innovating. Unlike the Portuguese, Calicut had armed the naval crews with hand-held firearms. However, Calicut at that stage lacked the technological base to equip the fleet with broadsides. Aware of their inferiority in the sphere of naval firepower, the Calicut fleet changed its tactics. The nimble sambuks were to dodge Portuguese cannon fire by manoeuvering fast and then swarming to the Portuguese ships. Then, the Calicut fleet's naval crew were to climb aboard to assault the Portuguese ships and overwhelm the numerically inferior Portuguese mariners in close-quarter combat on the deck of their ships. On 10 February 1503, Vasco da Gama with 10 ships decided to encounter the Calicut armada. Each caravel had 30 men, four heavy guns (two on each side), six falconets and 12 smaller swivel guns. Vincente Sodre with five caravels patrolling the Malabar Coast joined da Gama's fleet. In the naval battle which unfolded, Sodre's caravels, with broadside fire, were able to sink three large Calicut ships. Koja Casim's cargo ship was plundered and the sambaks fled.[207] Nevertheless, the Zamorin made strenuous attempts to upgrade the firepower capability of his fleet. Two Italian mercenaries aided the Zamorin in this respect. And the Zamorin also appealed to Ottoman Turkey to acquire naval gunpowder technology.[208] However, all these attempts failed. The first Governor-General of Portuguese India was Francisco de Almeida (1505–9). His objective was to make Portugal master of the Indian Ocean.[209] Portuguese naval firepower established its supremacy along the Malabar Coast in particular and the Indian Ocean in

general. In 1507, an Ottoman fleet with 15,000 personnel under Admiral Mir Hussain left Egypt with the object of destroying Portuguese maritime power in the western Indian Ocean. In 1509, Francisco de Almeida defeated the *Mamluk*/Ottoman fleet near Diu.[210] Adil Shah of Bijapur with the aid of the Ottoman Turks prepared a fleet of 20 naus and several parus at Goa to confront the Portuguese. However, Adil Shah was fighting Vijayanagara and this enabled the Portuguese to capture Goa easily in February 1510.[211] So, not merely superior naval technology, but also internal dissention among the South Asian rulers, facilitated Portuguese intrusion.

The Portuguese occupied Malacca in 1511.[212] However, Alfonso de Albuquerque with 20 ships failed to take Aden in 1513. Then, Albuquerque sailed into the Red Sea and occupied the Island of Kamaran.[213] In 1516, Portugal sent 37 ships to the Red Sea against the *Mamluk* fleet.[214] In 1517, Lopo Soares de Albergaria took 15 naus/naos, 10 navios and caravels, eight galleys, one caravelao, one bargantin and one Indian junk to attack Aden. During the 1520 expedition to Hormuz, Diego Lopes de Sequeira had 11 naus, two galleons, five galleys, four square-rigged vessels, two brigantines and two caravels.[215] The combined Ottoman-Gujarati Siege of Diu failed in 1538. And the Ottoman Indian Ocean fleet under Hadim Suleiman returned to the Red Sea without achieving anything substantial. However, the Ottoman-supplied cannons aided the defence of Surat Port against the Portuguese.[216] The Ottomans occupied Aden in 1538.[217] Negapatnam (Snake Town) on the Coromandel Coast was the place of earliest settlement of the Portuguese. In 1660, the Dutch occupied this region.[218] In 1622, with British naval aid, the Persians captured the Island of Hormuz from the Portuguese.[219]

To conclude, the RNA of early modern Europe gave Portugal substantial but not decisive advantages in the oceanic warfare which unfolded in the Indian Ocean during the late fifteenth and early sixteenth century. The Portuguese depended on constructing ships with the aid of indigenous shipwrights in India. For instance, in 1619, one Brahmin Manga Sinay at Daman constructed a galleon and smaller trading vessels for the Portuguese. In 1681, at Bassein, the Gujarati merchants and indigenous shipwrights constructed several warships for the Portuguese.[220] Lack of timber in Portugal and superiority of Indian teak wood over European pine and oak as regards shipbuilding encouraged the Portuguese authorities to build ships in India.[221]

Geoffrey Parker in an article asserts that the artillery fortresses introduced by the West Europeans along the coastline of Asia allowed the former to dominate the Asians. The low thick walls, broad moats and geometrical designs characterized the artillery fortresses which functioned as engines of Western maritime expansion. Parker then goes on to argue that even ordinary European forts were so superior to anything which the non-Westerners could bring into the field that the artillery fortresses sprang up only when different European powers competed with each other for establishing supremacy on a particular coastal zone of Asia. The star-shaped artillery fortresses functioned as nodal centres of maritime power. These forts enabled the West Europeans

to project power deep into the interior of the subcontinent. Further, the artillery fortresses proved indestructible to the aggression of the Asian land powers. There was only one exception: Japan. For some unknown reasons, writes Parker, the Japanese from the sixteenth century onwards were able to copy the model of Italian-style quadrilateral artillery fortresses which saved the 'Island Kingdom' from the grasp of the greedy Europeans.[222] Let us taste the validity of this proposition by making a case study of early modern coastal South Asia.

On land (especially in the coastal regions where they could bring their naval superiority into play), the Portuguese military performance was not striking. Even against a small naval power like the Zamorins of Calicut, the Portuguese military record was not a case of uninterrupted success. The Muslims in the Zamorin's Kingdom were sworn enemies of the Portuguese: because of the latter, the former had lost their monopoly of foreign trade. When the Portuguese received information that the Zamorin was preparing to launch an attack, they attempted to preempt the Calicut Raja. In 1524, the Portuguese fleet appeared before Ponnai in the morning and bombarded the shore. In the night, the fleet sailed to Pantalayani and captured 40 ships belonging to the Zamorin, and many Muslim soldiers also died due to the Portuguese attack.[223] The Zamorin sent a land army which laid siege to the Portuguese fortress at Calicut. Menezies arrived with a relieving fleet. However, the Calicut General Kutti Ali resolutely conducted the siege. In 1525, the Portuguese abandoned the fort.[224] The above incident also shows the limitations of a battle fleet as regards projecting power inshore on a long-term basis when confronted by a hostile land army. The Portuguese naval threat posed serious concerns for the Deccani Sultanates as far as the high sea was concerned and 'limited threat' in their coastal areas. During 1570–71, the Portuguese settlement at Chaul (Rewadanda) was attacked by Murtaza Nizam Shah of Ahmadnagar and Ali Adil Shah of Bijapur. Superior Portuguese leadership, and bribery and corruption amongst the Deccani Sultanate's forces, enabled the Portuguese stronghold to survive.[225] The city of Daman was north of Goa and was situated on the bank of Damanganga.[226] In February 1580, the Mughal General Qutub-ud-din Khan was ordered to capture Daman. With 15,000 men he ravaged the countryside but failed to capture Daman due to lack of artillery and a supporting fleet.[227] Gemelli Careri, who visited India in 1695–96, writes about the fortifications of Daman:

> It has four modern and well built bastions; but it is somewhat irregular and ill provided with cannon. The compass is about two miles, without any ditch on the east and south sides, but with a low work, or entrenchment breast high. On the other side the ditch is filled by an arm of the river, towards which there are two gates, and before the first a draw bridge. All the walls are backed with ramparts.[228]

On land, the Portuguese were no match for the Mughals. In 1632, on Shah Jahan's order, the Bengal *subadar* destroyed the Portuguese settlement at

Hugli.[229]And as early as 1570, the Portuguese monarchy was approaching a state of near bankruptcy.[230] In contrast, the Mughal revenue continued to rise till the late seventeenth century.

On the Coromandel Coast, the EIC established a garrison at Fort St George (Madras/Chennai).[231] Thomas Bowrey who visited India during the second half of the seventeenth century describes Fort St George in the following words:

> The Fort and town, which is very considerable, is situated very near the sea, indifferent well populated by the English, and wholly governed by them, very well fortified and surrounded with very potent and strong bulwarks, points, and batteries, within which many Portuguese are admitted to dwell, being subject of our English Government.[232]

In 1689, at Fort St. George it was decided to hire 100 Topasses (Black Portuguese) as garrison troops.[233]

The gateway for Mughal naval power was Gujarat. Ahmedabad was the capital of the province. The region was very fertile. Corn and rice grew in large quantities. The important coastal towns were Surat and Cambay. Ahmedabad exported indigo, ginger, sugar, lac, opium, honey and saltpetre. The most famous port of West India was Surat. There were many sand bars which prevented the large ships from entering the river. So, the big ships were unloaded at the Bar of Surat which was six French leagues from the city. Broach mainly exported cotton stuffs known as baftas to the Indies.[234] Jean De Thevenot who visited India during 1666 and 1667 describes Broach in the following words:

> The fortress of Broach is large and square, standing on a hill. ... The town lies upon the side, and at the foot of the hill, looking towards the River of Narmada. It is environed with stone walls about three fathom high, which are flanked by large round towers at thirty or thirty five paces distance one from each other. ... The hill being high and hard to be mounted, it might be a very easier matter to put the fortress in a condition not to fear any attack, but at present it is so much slighted, that there are several great breaches in the walls to the land side, which nobody thinks of repairing.[235]

About the fortifications of Cambay, Jean De Thevenot writes:

> Cambay is as big as Surat, but not near so populous; it has very fair brick walls about four fathom high, with towers at certain distances. The streets of it are large and have all gates at the ends, which are shut in the night time. The houses are very thick, and built of bricks dried in the sun.[236]

Most of the inhabitants of Cambay were *banias* and Rajputs. Thevenot tells us that the sea was half a league from the suburbs of the town. Great ships

could not come nearer than three to four leagues from the town. The tides were violent in the north of the Gulf of Cambay. The ships came to Cambay at the end of September.[237]

The coastal fortifications of pre-British India did not follow the *trace italienne* pattern for several reasons. Several forts took advantage of natural terrain. For instance, the fort at Broach was constructed at the top of an inaccessible hill. There was no road for an invading army to carry cannons for blasting the fort. Further, the enemies which the owners of these forts faced had mainly cavalry-rich forces and not capital-intensive armies.

It would be wrong to argue that the West European navies had a walkover over the South Asian maritime powers. The Asians responded quickly to West European naval pressure. Carlo M. Cipolla writes that, both in 1551–52 when Piri Reis's Ottoman fleet entered the Persian Gulf and in 1576–77 when the Ottomans launched a maritime expedition against Ali Bey of Muscat, the Ottomans relied on large galleys. In the small closed sea, galleys still had limited utility but certainly not in the open seas. Late in the sixteenth century, the Ottomans came up with ocean-going vessels.[238]

Madhavi Yasin writes that the shipwrights of Konkan were illiterate. They could not put on paper the plan of the ship to be built but could copy a model well.[239] In 1501, Cabral saw that ships on the South-West Coast of India were constructed with iron nails. Varthema noted that, in the first decade of the sixteenth century, in Calicut, the Indians constructed ships with lot of iron nails. In 1509, after capturing Goa, Alfonso Albuquerque found lot of pitch, oakum, cordage and nail in the storehouses. In 1507, at Gujarat, an Arab merchant constructed a galleon like the Portuguese. Initially, the Mughals used marble anchors. Later, the Mughals shifted to the use of iron anchors. The Mughals used to buy iron anchors from the British. A.J. Qaisar opines that the Mughals learnt the use of iron nails from the Portuguese.[240] We have a few descriptions of the Mughal ships which plied the high sea. For example *Ganj-i-Sawai*, which was the largest ship at Surat, had 800 guns and 400 muskets on board.[241] A Dutch navigator in the Mughal service noted that this ship was so overcrowded with men and goods that the guns could neither be loaded properly nor fired. In 1695, the European pirate ship named *Evory* captured *Ganj-i-Sawai* easily.[242]

As a point of comparison, during the 1560s, the Atjeh Sultanate was constructing ships which were equivalent to Portuguese Indiamen (naus/carracks). In 1561, an Atjehnese 50-gun ship manned by 500 Turks, Arabs and Abyssinian warriors fought effectively with two Portuguese galleons and some foists near the South Arabian Coast. The Atjehnese ship was captured, but not before one Portuguese galleon was burnt and another was damaged.[243] In the second half of the sixteenth century, the Acehnese fleet was comprised of long galley-type oared ships. There were large galleys, 'bastardas' galleys, fustas, galeotas, lancharas/lancarans (swift longship propelled by oars and sails) and champanas (Malyan sampan) for carrying ammunition. The Acehnese fleet included one-, two- and three-masted ships, with central and stern

post rudders and also with South-East Asian double-quarter rudders. The lancharas were taller than the galleys and in length the same as the galleys. Some lancharas had two rows of oars. Pierre-Yves Manguin claims that, due to Portuguese and Turkish influence, the fusta and galeota classes of ships were introduced to the Indian Ocean. These were small galley-type ships. The Acehnese had merchant ships called naus/naos. However, most of the Acehnese ships had small swivel guns on board. The Acehnese were yet to fit big guns and use them properly from the ships.[244] The Acehnese made several attempts in the sixteenth century to acquire gunpowder technology and artillery men from the Ottomans, but they were not very successful. For the Ottomans, the Indian Ocean theatre (especially South and South-East Asia) remained a secondary front.[245] It is one of the 'ifs and buts of history' about what would have happened if, in the second half of the sixteenth century, the Ottoman Empire shifted its strategic focus from the Central Mediterranean to the Indian Ocean.

Further east, the Chinese were not in a position to check maritime dominance of the West Europeans. The Chinese war junk was suited for ramming and boarding. With very high castle and no portholes for guns in the hull, the war junk was not a gunship. During the late sixteenth century, the war junks had small iron guns and the crew had arquebus. In addition, the Chinese mariners used fire arrows, rockets and lime powder.[246]

In 1670, the Mughal Navy joined hands with the Siddis of Janjira on the Konkan Coast. The Mughal objective was to dominate the coastline between Gujarat and Goa.[247] For conducting littoral warfare, writes Jan Glete in the context of amphibious warfare in pre-eighteenth century Scandinavia, shallow draught ships and oared crafts, which combined mobility in confined water with firepower and capacity to carry soldiers, were required.[248] The same applies for conducting littoral warfare on the pre-1700 Konkan Coast. Siddi Yakut an Abyssinian *sirdar* received an annual allowance of Rs 400,000 from Emperor Aurangzeb in order to check European 'piracy' along the West Coast of India. The Siddi was also ordered to attack Bombay (Mumbai) if possible. The Siddi fleet was comprised of large vessels (300 to 400 tons) equipped with heavy ordnance as well as small rowing boats, each of which carried a few matchlock men and spearmen. The Siddi fleet was capable of launching amphibious raids on the small offshore islands along the West Coast of India. The Siddi fleet was a coastal navy and not a high seas navy. The Siddis forced the British John Childs to make peace with the Mughals in 1689. In 1693, with the Mughal General Matabar Khan, the Siddi attacked Portuguese Bassein. The creek of Bassein was navigable as far as Kalyan and Bhiwandi. In November 1700, Siddi Yakut captured Anjanvel Fort after defeating the Maratha detachment under Ramchandra.[249]

After the collapse of the Mughal power with the death of Aurangzeb (1707), the Marathas posed the most serious challenge to the West European maritime activities. Shivaji initiated the construction of ships at a creek of Kalyan in 1657. Later, ships were constructed at the docks of Kolaba, Sindhdurg, Vijaydurg, Ratnagiri and Ajnavel.[250] The Hindu artisans called *sutars* in the

Konkan region along with the Parsis and the Indian Christians engaged in shipbuilding on the Konkan Coast. These indigenous shipwrights also drew on the centuries-old tradition of shipbuilding in this region. Teak wood was available on the Konkan Coast in profusion. And this factor aided Maratha shipbuilding activities.[251] The Maratha Navy established by Shivaji was comprised of ghurabs and gallivats. There were ghurabs weighing 300 tons each with three masts and those weighing 150 tons with two masts. The gallivats were large rowing boats and the largest were of 70 tons with two masts.[252] Initially, Shivaji challenged the Mughal naval ally, the Siddis of Janjira. Since the Siddis were also enemies of the Portuguese, some Maratha ships were constructed in the Portuguese shipyard at Bassein.[253] Thus, the early modern West European RNA was copied by the South Asian and South East Asian powers. Nevertheless, the European powers continued with their naval innovations. G.N. Clark claims that the bomb ketch was introduced by the French Navy between 1683 and 1688 in the Mediterranean.[254] And they were used in the Indian Ocean.

There is some scattered evidence about Indian marine maps. Samira Sheikh writes about a Gujarati map of the Gulf of Cambay. The paper was manufactured in South Asia and the text is in Gujarati and Arabic. The text contains information about sailing directions for navigating the water near the ports of Surat and Jeddah, a list of 90 Indian Ocean ports and stellar altitudes for these ports. Most of the squares of the grid near the open end of the Gulf of Cambay on the eastern side are marked with numerals which indicate depth soundings measured by *vam* (equivalent to fathom). Other numerals indicate depth of mud and sand, thus warning of shallow water over the shoals, and alert the users to the presence of sandbanks.[255]

It would be erroneous to assume that the non-West European regions in general and India in particular were backward in all sciences vis-à-vis West Europe during the early medieval era. For instance, on 20 February 1663, the Court of Directors wrote to Fort St George that the gentoos had a reputation for surgery. They were experts in letting blood. So, some of them should be hired and sent in some British ships to St Helena.[256]

Low-intensity maritime threats

Naval historians frequently overlook low-intensity conflicts in the maritime space. None of the Western powers with their advanced naval technology, as represented by the ships of the line, was able to check Asian piracy completely. After the conquest of Goa in 1510, Portugal attempted regular patrolling operations along the West Coast of India. The Northern Armada guarded those vessels which were coming to Goa. And the Southern Armada cruised the Malabar Coast up to Came Comorin and also guarded the approaches to the Maldive Islands. After 1533, the Indian West Coast was divided into Northern, Central and Southern Zones under the Captain-Majors based at Bassein, Goa and Cochin respectively.[257]

The Portuguese Viceroy Martin Afonso de Castro ordered construction of light ships at Goa which were more effective than the gales and the fustas, to check piracy along the Malabar Coast. Thus, a sort of demodernization of the naval force comprising of lighter versions of ships rather than ships of line characterized the Portuguese Navy in South Asia. Similarly, the Ming Navy also gave up heavy ordnance-equipped big ships in favour of light fast ships to check the Japanese pirates along the coast of China. Timber and coir for construction of Portuguese ships came from Canara, Cochin, Cannanore, Bassein, the Maldives and Mamali. The local merchants were not allowed to trade in teak wood. Timber from Canara was used for making masts and the yards. Some of the materials from Goa were also sent to Lisbon for manufacturing carracks.[258] Thevenot writes about the West Coast of India during the second half of the seventeenth century:

> ... Almadie which is a kind of brigantine used by the Portuguese for trading along the coast. But these vessels go not commonly but in the night time, that they might not be discovered by the Malabars. In the day time they keep in harbours, and in the evening the master goes up to some height to discover if there be any Malabar barks at sea. The Almadies sail so fast that the Malabars cannot come up with them, but they endeavour to surprise them, and when they discover any one in a harbour, they skulk behind some rock, and fall upon it in its passage. Many of the Almadies are lost in the Gulf of Cambay.[259]

In 1573, the Mughals signed a treaty with the Portuguese. The Mughals agreed not to give shelter to the Malabar corsairs and in return the Portuguese agreed to provide a free *cartaz* (pass) for an imperial ship to sail to the Red Sea annually.[260] The Portuguese alliance with a South Asian power was not an isolated incident. In 1586 and in 1589 the Kunhalis defeated the Portuguese. In 1595, Kunhali IV became the chief of the Kunhalis and declared his independence from the Zamorin. In retaliation, in 1600, the Zamorin with 6,000 soldiers and the Portuguese fleet under Andre Furtado laid siege to the Kunhali fortress at Kottakkal. The fort fell to the joint assault and Kunhali was taken to Goa and executed.[261] Without the alliance of the Portuguese and the Zamorin, Kunhali could not have been defeated. The Portuguese lacked military manpower, which the Zamorin supplied, and the Zamorin lacked offshore naval firepower, which the Portuguese provided.

In 1715, the fleet of the Arabs of Muscat comprised one ship of 74 guns, two of 60 guns each, one of 50 guns and 18 small ships each containing between 32 and 12 guns. In addition, there were some trankis which were small rowing vessels, each with four to eight guns. The Arabs of Muscat controlled the coastlines from Cape Comorin to the Red Sea.[262] Not only in the Indian Ocean, but also in the eastern Mediterranean, maritime piracy flourished. The Barbary corsairs remained a thorn for the West European states even in the seventeenth century.[263] It was the Maratha Admiral

Kanhoji Angre (b. 1669; d. 1729) who carried the *guerre de course* to its logical conclusion. Kanhoji succeeded Sidhoji Gaur as the commander of the Maratha Navy. Kanhoji's naval headquarter was Kolaba. In 1727, the EIC estimated that Kanhoji's 'piracy' was causing the British an annual loss of 50,000 sterling pounds.[264]

The above historical incidents should warn historians against constructing a binary European-Asian/South Asian conflict. Sanjay Subrahmanyam aptly remarks that in the 'Age of Contained Conflict', the Mughal-Portuguese interaction was guided both by collaboration as well as confrontation.[265] One could argue that the Asian piracy somewhat induced the West European maritime powers to collaborate with some of the indigenous polities who were also at the receiving end of the piracy.

Conclusion

The Military Revolution on the sea as in the case of the land is a hoary concept. Neither the ships of the line nor the so-called artillery fortresses proved decisive in providing the Europeans mastery of South Asia's coastline in the early modern era. What's suitable for the North Sea and Italy might not be suitable in the Bay of Bengal and coastal India. But, the issue is that the West Europeans had reached the shores of Afro-Asia and not vice versa. The million-dollar question is, Why?

Certain political, social and cultural factors shape the maritime tradition of a country. For instance, the Dutch fishing fleet was the largest in Europe during the early modern era. And the fishing fleet served as a training school for sailors who manned the Dutch transoceanic vessels. Again, the British maritime enterprise was aided by the enclosure of common land for sheep herding. This threw a large number of agriculturists as landless labourers into the market. And they became sailors.[266] Tirthankar Roy's assertion that throughout history Indians built small boats and boat manufacturing technology remained stagnant in South Asia is a bit overdrawn. From the era of the Indus Valley Civilization we find a slow and gradual process of maritime innovations occasionally punctuated by the RMAs (as happened under the Cholas and the later Mughals). The Chola and the Ming cases were aberrations in the history of two Asian continental states. Both these case studies show the danger of studying naval history in separation from what was going on onland. From the early medieval period, the Indian merchants used huge cargo ships which were able to carry elephants as well as a large number of passengers. We could speculate that such cargo ships were used as transporters for ferrying war animals and troops during the maritime invasions. There were no separate war transporters as in late medieval West and South Europe but, during emergencies, cargo ships were converted into military/naval transport ships. Moreover, in the Mughal and Maratha eras, the focus was on conducting riverine warfare and coastal amphibious warfare with dual-purpose ships like ghurabs and gallivats. This was because the agenda of the

Mughals and the Marathas was not to establish an overseas maritime empire but a continental empire stretching from the arid Kabul plateau to the deltaic Bengal. Again, in the context of medieval and early modern Europe, Trim and Fissel opine that amphibious operations had a strong commercial and cultural bent and hence were not Clausewitzian by nature.[267] As far as South Asia was concerned, amphibious warfare conducted by the Cholas might had been shaped partly by the prospect of commercial success and loot but was mostly due to political ambition. And, Mughal amphibious warfare in East and North-East India was driven by the power-politics paradigm.

As regards the Ottoman Empire, Svat Soucek writes that a merchant marine was absent and the government did not encourage long-distance overseas trade as it would have involved intense interaction with the 'infidels'. Rather, the Ottoman ruling class was interested in safeguarding the empire and combating the infidels. The Ottoman bureaucracy was *madrasa* educated (as mostly in the case of the Mughals) and the objective remained to safeguard the existence of the theocratic state. Soucek goes on to say that, unlike in West and South Europe, in the Ottoman Empire there was no attempt on the part of the sultan's government to establish schools of navigation and cartography, an institute for overseas exploration, etc. The same applies in the case of medieval India. Again, in China, the Neo-Confucian bureaucrats who came to power after the reign of Yong Le Emperor turned against the maritime voyages and burnt all the data related with Zheng He's voyages.[268] A cultural reductionist argument is dangerous and inadequate. One could argue that certain traits in the Ottoman culture (i.e. anti-navalism and all those traits associated with it) got strengthened due to changing geopolitical requirements of the empire: rise of threat along the land borders in the Ukraine and Hungary, etc. And, in the case of Ming China, we have seen that a power struggle in the court plus the threat posed by the steppe nomads also accelerated the emergence of an anti-merchant/trade lobby. In the Indian case the states like Calicut and Cochin which relied on mostly overseas trade were too small territorially and demographically to make any difference to the subcontinent's geopolitical culture. What was lacking in early modern India was state support for the shipwrights (especially what in modern terminology is known as research and development). Further, sustained support by the merchant and commercial class to the political managers for aiding long-distance commercial activities with naval power was absent. For instance, a merchant-king nexus existed in fifteenth-century Portugal.[269] This to an extent explains the Portuguese dynamism as regards overseas trade and naval expansionism. The West European polities legislated and actively intervened by introducing protective tariff barriers and using force overseas in order to further their nations' commercial and industrial gains in the overseas markets.[270] This, however, did not happen among the big agrarian bureaucratic empires of Asia. This was because the agenda of the big powers like the Mughals, Marathas, etc. were different, i.e. construction of continental empires rather than maritime empires.

Notes

1 One Indian historian of ancient India, Ranabir Chakravarti, writes that the period till circa 1300 is regarded as the ancient/early Indian period by many historians. In another essay, Chakravarti writes that the early medieval period which is between the ancient and medieval eras could be compressed between 600 CE and 1300 CE. See Ranabir Chakravarti, 'Visiting Faraway Ports: India's Trade in the Western Indian Ocean, ca. 800–1500 CE', in Rajat Datta (ed.), *Rethinking a Millennium: Perspectives on Indian History from the Eighth to the Eighteenth Century, Essays for Harbans Mukhia*, New Delhi: Aakar, 2008, p. 249. Ranabir Chakravarti, 'Early Medieval Bengal and the Trade in Horses: A Note', *Journal of the Economic and Social History of the Orient*, vol. 42, no. 2 (1999), p. 195.

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268 Svat Soucek, 'Piri Reis and Ottoman Discovery of the Great Discoveries', *Studia Islamica*, no. 79 (1994), pp. 121–39.
269 Pearson, *The Portuguese in India*, p. 8.
270 Prasannan Parthasarathi, 'Was there Capitalism in Early Modern India?', in Datta (ed.), *Rethinking a Millennium*, pp. 342–60.

Conclusion

About half of the world's population lived in pre-1700 China and South Asia. The combined gross domestic product of pre-modern China and South Asia probably exceeded that of the western part of Eurasia. There are a lot of similarities as well as dissimilarities between pre-modern South Asia and China. The major Chinese settlements were in the low-lying plains and river valleys where the terrain was suited for rice cultivation in the flooded paddy fields. The forested hills and the mountains were inhabited by the aboriginal peoples. The warm watery environment of South China was different from the dusty plains of North China.[1] Similarly, in pre-British India most of the population was concentrated along the river valleys and plains suited for rice cultivation. And the tribes inhabited the mountainous and forest regions. Further, the open plains of North India (like North China), suited for large-scale cavalry operations, were different from the rocky Deccan plateau and the warm and moist estuarine regions of East India (like the coastal river valleys of South China).

Peter Lorge in his overview of pre-modern Chinese military history writes that political orders were created by war and all imperial dynasties were conquest dynasties. This observation applies for pre-modern India. Further, the Chinese sources generated by civilian scholars portrayed China as a non-militaristic power. Imperial ideology acted as a cover-up for coercive power. As far as the ancient Indian sources are concerned, the *acharyas* played the same trick. They tried to hide the role of organized violence in state making and state breaking under the blanket of maintaining *rajadharma* and the social order. However, the medieval sources generated by Arab and Persian scholars and chroniclers who followed the 'secular style' in their writings are more forthcoming in their analysis and linked kingship with organized violence. Lorge notes that study of Chinese military history requires removing the focus from dynastic histories to the local power holders. However, Lorge's observation that pre-modern South Asian and European empire building were inefficient compared to empire building in China is questionable.[2] Lorge emphasizes:

> What Chinese dynasties did better than any South Asian, Middle Eastern, or European would-be conquerors was to centralize the control of military means under a single ruler, without leaving local strongmen the possibility of raising their own legitimate military forces. There was nothing like the feudal European nobility.[3]

Of course it must be admitted that the pre-modern Chinese polities were more bureaucratic compared to the South Asian ones. Until the first century AD, the Han Empire continuing the tradition of the Warring States and the Qin Dynasty forced all males to undergo regular military training and serve for a certain period in the military. The bureaucracy registered the population and oversaw military exercise.[4] In contrast, in South Asia, registration of population by the polities started only during the nineteenth century. Then, for instance, during Song Taizong's reign an examination system was the means for entry into the civil service without any reference to family background. A system of examination for entry into the civil service was in operation from Han times, but under the Tangs gained greater social and political significance. No other polities in Eurasia, unlike China, could boast of a professional civil service.[5]

Nevertheless, our analysis has shown that the South Asian empires were strong bureaucratic entities capable of raising, maintaining and replacing large numbers of armed men. Appendix A substantiates this point. No doubt, the demographic and economic resources of the subcontinent as in the case of China made possible the context for operation of such large armies. Again, in the early medieval period, when the so-called 'shadowy' empires were functioning in India, the landholders gained economic and military power. However, a sort of gentrification and feudalization resulting in dissipation of state sovereignty occurred in China and Western Eurasia along with South Asia. In the medieval and late medieval eras, we find a complex DNA double-helix-like structure between the central government and the local elite. In fact, it would be wrong to argue that strong local elite meant weak central government. Both in the Sultanate and Mughal eras, the strong central governments were able to co-opt and integrate the powerful local landholders and chieftains with their armed retainers within their pan-Indian imperial fabric.

Both China and India till the eighteenth century suffered from the invasion of Central Eurasian nomads. For the strategic managers of the Chinese dynasties, the region north of the Great Wall was a problem. For the rulers of India, Afghanistan was a problem. Lorge in the context of China says that a steppe nomadic cavalry army could defeat a sedentary society but could not capture it permanently.[6] In South Asia, we have seen that both the Sultanate and the Mughals understood this problem and initiated certain mutations in their force structure. The Sultanate, along with its cavalry, utilized *paiks* and elephants, and the Mughals in addition brought in gunpowder weapons. The net result was that the slave sultans of Delhi and the Chagatai Turkish-Mongols/ Mughals transformed themselves into quasi-nomadic sedentary entities,

which explains the longevity of their rules. In medieval China, the 'barbarian regimes' utilized Chinese soldiers as infantry for manning the sieges and garrison duties.[7] Lorge notes that the southern Chinese polities were always weak in cavalry and strong in naval forces.[8] The same holds true for eastern and southern Indian polities. In addition to naval flotillas, the polities of these regions maintained a large number of infantry and elephants.

Sanjay Subrahmanyam in a set of essays advances the argument that the early modern era in Eurasia can be characterized as an 'Age of Contained Conflict'. He writes that both the Asians and the Europeans (for instance Portuguese, Ottoman Empire, Mughals, Deccani Sultanates and South-East Asian polities) used force on land and sea against each other. But, at the same time, both parties realized that the cost of initiating and sustaining organized violence was extremely high, and the benefits that would accrue if the other party was defeated were not perceived as too great.[9] Subrahmanyam's phrase is better than the concept of 'Age of Partnership' hitherto used to describe the interaction between two halves of Eurasia in the early modern era. However, there is a caveat. This book has shown that, in the early modern era, regardless of intentions, the capability (tools available in the hands of the West Europeans) of Western Eurasia was not adequate to destroy or even defeat the big South Asian powers. Jos Gommans's argument that, for ideological and institutional reasons, from circa 1000 CE onwards, West Europe unlike South Asia generated polities which were internally more cohesive and able to close their external borders, is erroneous.[10] The great divergence in matters military and state building started in the eighteenth century due to two simultaneous and sequential processes: the decline of the South Asian polities in particular and the mainland Asian empires in general and the subsequent quantum jump of the West European military prowess. But, that is a separate story to be told someplace else, some other time.[11]

Why and when did the East start declining vis-à-vis the West? Svat Soucek wonders if Islam itself was against the emergence of modern science and secular knowledge? He makes a case study of the Ottoman Empire and claims that the religious slant in the field of education prevented the emergence of material science in the Islamic world. Theocracy and scholasticism as embodied in the Ottoman Empire, writes Soucek, prevented the unfolding of a Scientific Revolution in the Islamic domains.[12] On a somewhat similar line, Archibald R. Lewis notes that fourteenth- and fifteenth-century Europe experienced the emergence of many universities which were seats of secular learning. Dissemination of secular knowledge was further accelerated by the spread of the printing press in West Europe. And, at that time, the Islamic World was eschewing science at the cost of religious knowledge.[13]

Whether there was a distinct pre-modern Asian culture or not is beyond the scope of this volume. However, there was no Oriental/Asian Way of Warfare. The Herodotean division of the world into Orient and Occident which gave birth to the idea among the modern historians about Eastern and Western Ways of Warfare is faulty. Scholars categorize the Western Way of Warfare as

focusing on close-quarter combat by infantry, while the Eastern/steppe nomadic military tradition was dependent on fighting from a distance and emphasizing treachery and deceit.[14] The strategic culture approach which was once popular among the nuclear warfare theorists and then entered the academic discipline of history (somewhat indirectly helped by the Culturalists) is now facing challenge.[15] In fact, there were great differences as well as similarities in the way of warfare among the Asian powers at various moments in time. For instance, while both early medieval Persia and India did not possess standing navies, the Persians relied more on horses and the Indians on elephants.

As far as Indian military history is concerned, a few authors have attempted to build a case for an unchanging Indian strategic culture. If anything, this book shows that it is a hoary ahistorical concept. However, if we take a *longue durée* view, then certain elements in South Asian warfare stand out. There were huge armies, large-scale use of elephants and absence of long-term policy in creating a blue water navy. Except for the use of elephants, the other two elements of Indian warfare were present in the case of pre-1700 Chinese war making also. The huge size of armies was due to the demographic and economic richness of the subcontinent, as in China. The Chola Blue Water Navy disintegrated soon. This was for cultural, economic and strategic reasons. Hinduism did not sanction engagement in trade and commerce. Crossing the *kalapani* was considered as a sin. Second, the mercantile class in South India at that time was not interested in overseas business ventures. The importance of agriculture and overland trade with Central and West Asia also somewhat lessened the importance of overseas commerce, which was an essential prerequisite for developing an ocean-going navy. Hence, there was no powerful economic interest group to support the naval programme. Last, the Cholas faced land threat from the neighbouring polities. In such a context, maintenance of an ocean-going fleet became a luxury. The Mughals developed a sophisticated inland amphibious warfare which emphasized joint operations between their ground force and river fleet. Mughal amphibious warfare was geared to the demands of territorial acquisitions along estuarine Bengal and Assam. Continuous threats by the steppe nomads across the North-West Frontier of the subcontinent prevented the South Asian polities from giving sustained attention to an ocean-going navy. One could make a case that the ever present nomadic threat north of the Ordos loop also prevented most of the Chinese polities from maintaining an ocean-going navy.

The continued use of elephants as a command vehicle and as a sort of premodern MBT in the battlefield seems to suggest an unchanging nature of the 'Hindu strategic culture'. The Indian armies continued to depend on elephants, not due to cultural naivety, but because of their availability in large numbers and the problems of raising good-quality horses. The elephant functioned as a battering ram. The elephant was also useful as a command vehicle as the *senapati* from his *howdah* could survey the battlefield from a higher position. In early medieval China, unlike in India, elephants became extinct. The

techniques for using elephants in warfare within India emerged slowly, and this in turn had societal ramifications. Chariots were regarded as symbols of royalty in the ancient period. But, elephants became the royal symbol during the early medieval period. The *acharyas* who wrote several treatises popularized elephants as the 'true' Hindu engines of war. The Islamic nomadic archers, due to their use of iron stirrups, were much more combat-effective than the Huns. The element of surprise and mobility provided by horse archery enabled the Islamic Central Asian nomads to dominate the North Indian plain.[16] But India did not possess the huge grassland necessary for grazing the Central Asian steppe horses. However, the nomads' composite bows were vulnerable to moisture. Hence, the Turks were forced to integrate *paiks* and elephants within their force structure as part of a Military Transformation, which in turn enabled them to conquer South and East India permanently.

Several historians accept that the size of the West European armies registered exponential growth during the seventeenth and the eighteenth centuries. And this is considered as one of the indices of the Military Revolution in early modern West Europe. In pre-British India, due to the demographic resources of India and high agricultural productivity, the indigenous power-brokers mobilized huge armies which can only be compared with the pre-modern Chinese armies. Again pre-British battles and sieges in India were not 'flower wars', but involved huge casualties. One gets a glimpse of it from Appendix B. It would be erroneous to assert that only Western Warfare from the Classical era onwards was bloody and lethal. Comparative studies of the South Asian military organizations show that the pre-British South Asian armies were not collections of disorganized mobs but were comprised of veteran soldiers organized in well defined units and were able to manoeuver in the battlefields. The presence of centralized bureaucratic states and standing professional armies has been overemphasized in West European history and underemphasized in South Asian historical studies. And warfare in South Asia was not static either, in terms of technology or theory. The RMAs and Military Transformations occurred in South Asia due to diffusion of technologies and techniques of warfare across various parts of Asia. The global flow of technologies and military mercenaries was common even before the advent of globalization. Till 1700, military techniques and technology from West and Central Asia rather than West Europe shaped the South Asian military landscape. Both in the case of the RMAs and the Military Transformations, military mercenaries who migrated over long distances played a crucial role in shaping the flow of technologies and techniques of warfare. External threat and dynamic leadership from the men at the top are important factors in ushering in a successful RMA. For the Gupta Age RMA, the threat posed by the Huns and the charismatic leadership provided by Chandragupta Vikramaditya and Skandagupta were crucial factors.

Academic historians are usually shy of accepting the role of 'great men' in history. If anything, political, diplomatic and military history cannot be

delinked from the activities of great men and women. Following Carlyle, one might accept that a 'hero' (even a great villain) was both the creature and creator of his/her times. History has not been scripted out for us in advance. Humans are not mere playthings in the hands of impersonal long-term process, as Fernand Braudel and the Marxists would make us believe. Human beings both great and small (read ordinary) collectively act and react with the material structure. Both the material structure and the activities and intention of human beings are shaped and reshaped in this complex dialectical process. As our analysis has shown, we cannot think of pre-modern Eurasian history in general and South Asian history in particular without Alexander, Chingiz Khan, Timur, Babur and Nadir Shah. The career graphs of these 'gentlemen' show that all of them defeated political entities with more powerful economies. This should serve as a reminder to the economists (both Marxists and non-Marxists) that politics, diplomacy and military affairs frequently triumph over impersonal economic forces and shape the historical trajectory. Politics, diplomacy and warfare are not merely surface waves in the vast ocean of civilizations.

However, in the case of a Military Transformation, a sizeable segment of society had a vested interest in the shaping of the military organization. Hence, the paradigm of warfare established by a Military Transformation remained on the historical canvas for a longer period. Chariots and elephants influenced civilian values so much that in ancient India the chariot became the symbol of sovereignty, and the elephant became the sign of royalty from the medieval era till the advent of the British. The longevity of the Mughal paradigm of warfare was due to the fact that the *Badshahs* were able to integrate the *mansabdari* system with the indigenous social fabric. Taking a view covering two millennia, one can see the transition from tribal warriors, to mercenaries attached to dynasties, to slave armies and finally the emergence of the quasi-bureaucratic *mansabdari* system, till it was replaced by regimental soldiering in the late eighteenth century.

To conclude, in India the military establishments till circa 1700 emphasized cavalry and especially elephants at the cost of infantry and gunpowder weapons. This had nothing to do with cultural factors but was due to the fact that, in terms of speed and striking power, the cavalry (especially horse archers) had an edge over Western-style slow-moving drilled and disciplined infantry supported by field artillery. Again, the effectiveness of gunpowder weapons need not be overemphasized. Probably, Arthur Ferrill overstates his case when he asserts that Alexander's spearmen could have made good work of the Duke of Wellinton's force at Waterloo.[17] Drilled and disciplined infantry equipped with slow-firing handguns and lumbering field pieces were able to operate in the West European landscape which was not threatened by a large number of horse archers. Again, against the mounted steppe nomads who were the principal enemies of the agrarian bureaucratic empires of pre-1700 China and India, gunpowder was not that effective due to terrain and the nature of warfare conducted by the Eurasian nomads.[18] John France

persuasively argues in one of his recent books that the real Military Revolution which gave the West a decisive military edge over the 'rest' occurred only in the late nineteenth century.[19] About one hundred years before this Military Revolution, the large agrarian bureaucratic empires of India in particular and Asia in general had succumbed due to internal dissensions and intra-Asian struggles. Only then the great divergence in military affairs unfolded between the East and the West.

Notes

1 David A. Graff, *Medieval Chinese Warfare: 300–900*, London and New York: Routledge, 2002, p. 77.
2 Peter Lorge, *War, Politics and Society in Early Modern China: 900–1795*, 2005, reprint, London and New York: Routledge, 2008, pp. 1–3.
3 Lorge, *War, Politics and Society in Early Modern China*, p. 2.
4 Hans Van De Ven, 'Introduction', in Hans Van De Ven (ed.), *Warfare in Chinese History*, Leiden/Boston: Brill, 2000, p. 12.
5 Lorge, *War, Politics and Society in Early Modern China*, p. 33.
6 Lorge, *War, Politics and Society in Early Modern China*, p. 21.
7 Graff, *Medieval Chinese Warfare*, p. 60.
8 Lorge, *War, Politics and Society in Early Modern China*, p. 24.
9 Sanjay Subrahmanyam, *Explorations in Connected History: Mughals and Franks*, New Delhi: Oxford University Press, 2005.
10 Jos Gommans, 'The Eurasian Frontier after the First Millennium AD: Reflections along the Fringe of Time and Space', *Medieval History Journal*, vol. 1, no. 1 (1998), pp. 125–43.
11 See Kaushik Roy, *Military Transition in Early Modern Asia, 1400–1750: Cavalry, Guns, Governments and Ships*, London: Bloomsbury Academic, 2014. See also Prasannan Parthasarathi, *Why Europe Grew Rich and Asia Did Not: Global Economic Divergence, 1600–1850*, Cambridge: Cambridge University Press, 2011.
12 Svat Soucek, 'Piri Reis and Ottoman Discovery of the Great Discoveries', *Studia Islamica*, no. 79 (1994), pp. 139–42.
13 Archibald R. Lewis, 'The Islamic World and the Latin West, 1350–1500', *Speculum*, vol. 65, no. 4 (1990), pp. 833–44.
14 John France in *Perilous Glory: The Rise of Western Military Power*, New Haven, CT and London: Yale University Press, 2011 uses a new terminology to perpetuate the bipolar division: agro-urban warfare by the Western powers and steppe nomadic cavalry tradition of the Asian horse archers.
15 For a critique of the view of rising state power and increasing military effectiveness in the Western context, see David Parrott, 'Had a Distinct Template for a "Western Way of War" Been Established before 1800?', in Hew Strachan and Sibylle Scheipers (eds), *The Changing Character of War*, Oxford: Oxford University Press, 2011, pp. 48–63.
16 Simon Digby, *War Horse and Elephant in the Delhi Sultanate*, Karachi: Oxford University Press, 1971.
17 Arthur Ferrill, *The Origins of War: From the Stone Age to Alexander the Great*, 1985, reprint, London: Thames and Hudson, 1988, pp. 187–223.
18 Peter C. Perdue, 'Culture, History, and Imperial Chinese Strategy: Legacies of the Qing Conquests', in Ven (ed.), *Warfare in Chinese History*, pp. 252–87.
19 France, *Perilous Glory*, pp. 219–64.

Appendix A

Table A1 Size of armies in pre-British India

Date	*Name of the commander and the army*	*Number*	*Remarks*
327 BCE	Alexander's army which invaded India	30,000	This comprised his field force. Several other detachments were scattered along the upper reaches of the Indus and the Hindu Kush Mountains
326 BCE	Total strength of Alexander's force	120,000 men, 200 elephants and 800 ships on the Indus	
Circa 320 BCE	Asakenois/Asmakas	20,000 cavalry, 30,000 infantry and 30 elephants	Tribe inhabiting Swat and the Buner Valley
-do-	Siboi/Sivis	40,000 infantry	Inhabited west bank of the Indus
-do-	Agalassoi/Agalassians	40,000 infantry and 3,000 cavalry	
320 BCE	Kingdom of Gangaridae	4,000 war elephants	Present-day Bangladesh
320 BCE	Nanda Empire	200,000 infantry, 3,000 elephants and 2,000 chariots	
316 BCE	Chandragupta Maurya	600,000 infantry, 30,000 cavalry and 9,000 elephants	
642 CE	Harshavardhana of Kanauj	100,000 cavalry	In addition, he maintained a large elephant corps and infantry

Table A1 (continued)

Date	*Name of the commander and the army*	*Number*	*Remarks*
712 CE	Muhammad bin Kasim	6,000 cavalry, 6,000 camel-riding soldiers and 3,000 camels for logistical purposes	Arab force which invaded Sind
Circa 900 CE	Pala Army	5,000 war elephants	The Palas had a large number of infantry
Circa 980 CE	Anti-Subuktagin Hindu Confederacy under the Hindusahi ruler Jaipal	100,000 infantry and cavalry	The Rajput rulers of Delhi, Ajmir, Kanauj and Kalinjar provided contingents
1023 CE	Mahmud Ghazni	54,000 cavalry, 1,300 war elephants and 1,200 elephants for logistical purposes	This force was under the direct command of Mahmud of Ghazni. The contingents under provincial governors were not included in this estimate
1031 CE	Ghaznavid Royal Army after the death of Mahmud	5,000 cavalry, 2,000 infantry and 5 war elephants	
1192 CE	Mahmud Ghori	120,000 cavalry (both light and heavy)	
1192 CE	Anti-Ghorid Rajput Coalition under Prithviraj Chauhan	300,000 cavalry and 3,000 horses	This is the total of all the contingents of the Rajput rulers of North and West India, including East Punjab
Late twelfth century CE	Hoysala Kingdom	20,000 infantry and 16,000 cavalry	
1260 CE	Delhi Sultanate Army under Ghiyas-ud-din Balban	50,000 cavalry and 200,000 infantry	The size of the field army varied from 17,000 to 18,000 cavalry
1296 CE	Mongol invasion force under Targhi	20,000 cavalry	
1296–1316 CE	Delhi Sultanate Army under Ala-ud-din Khalji	300,000–400,000 cavalry. Of them, 50,000 were *ghulam* cavalry	For a particular campaign, on average some 40,000 cavalry was detached
1320 CE	Dalucha's Mongol force which invaded Kashmir	70,000 cavalry	The force was wiped out at Banihal Pass due to extreme cold and logistical difficulties

Table A1 (continued)

Date	*Name of the commander and the army*	*Number*	*Remarks*
1325–51 CE	Delhi Sultanate Army under Muhammad bin Tughluq	900,000 cavalry	For a particular campaign, the sultan could detach 80,000 cavalry. We do not have figures for the infantry
1354 CE	Delhi Sultanate Army under Firuz Tughluq	For the Bengal Campaign, 70,000 men were mobilized	
1365 CE	-do-	90,000 cavalry and 480 war elephants assembled for the Sind campaign. The *amirs* of Sind had 20,000 cavalry	
1389 CE	Delhi Sultanate Army under Muhammad Shah	50,000 cavalry (only 30,000 under direct government control)	Some 20,000 were provided by the various chiefs, whose loyalty changed according to circumstances
1398 CE	Timur	100,000 cavalry for the invasion of India	
1425–46 CE	Vijayanagara Army under Deva Raya	80,000 cavalry and 200,000 infantry	The army was a conglomeration of contingents maintained by several chiefs
Circa 1450	Vijayanagara Army	100,000 infantry, 190,000 cavalry and 575 war elephants	For a particular campaign, 50,000 soldiers could be mobilized
1530 CE	Sultan Bahadur of Gujarat	100,000 cavalry and 600 elephants	
1537 CE	Sher Khan of Bihar	70,000 cavalry	
1545 CE	Sher Shah Suri	150,000 cavalry, 1,500,000 infantry (including 25,000 musket-equipped infantry) and 5,000 war elephants	The figure for the infantry branch seems a bit exaggerated and probably included non-combatants also
1556 CE	Hemu	50,000 cavalry, 5,000 falconets and 51 cannons	Hemu had 1,000 elephants which included both those for war and those carrying luggage

Table A1 (continued)

Date	*Name of the commander and the army*	*Number*	*Remarks*
1627–58 CE	Shaḥ Jahan	The royal standing army comprised of 47,000 mounted musketeers, foot musketeers, gunners and archers	In addition, the emperor had 8,000 *mansabdars* who maintained their own contingents
1647 CE	Ration strength of the Mughal force under Shah Jahan	911,400 cavalry and infantry	This included the *ahadis*, contingents of the *mansabdars* plus the forces maintained by the zamindars who fought under Mughal banner
1661 CE	Mir Jumla the *Subadar* of Bengal	30,000 infantry, 12,000 cavalry and 323 ships	This field force invaded Assam
December 1667 CE	Mughal *Mansabdar* Raja Ram Singh's force for invasion of the Ahom Kingdom	The invasion force comprised 20,000 cavalry, 45,000 infantry (equipped with firearms and bows), but only 40 ships	Ram Singh's expedition failed
1738 CE	Mughal Provincial Army of Lahore under *Subadar* Zakariya Khan	15,000 cavalry and 2,000 irregular infantry	

Note: The figures are rounded for simplicity. We have arrived at the figures by taking an average from the various sources. The sources are cited in the endnotes of the main text

Appendix B

Table B Battles and sieges of pre-modern India

Date	*Names of battles and sieges*	*Size of forces involved*	*Casualties*	*Remarks*
May 326 BCE	Battle of Hydaspes	Alexander had 5,000 cavalry (including 1,000 horse archers) and 10,000 infantry. Porus and his son had 85 elephants, 300 chariots, 4,000 cavalry and 32,000 infantry	Between 12,000 and 23,000 soldiers on Porus' side were killed and another 9,000 became prisoners. In the Greek Army, 280 Macedonian cavalry and more than 700 infantry were killed	The Indian force occupied a 5-mile front
August 326 BCE	Siege of Sangala		17,000 Kathas/ Kathian defenders died	
712 CE	Siege of Brahmanabad	The fort was defended by 15,000 soldiers against the Arab assault force	6,000 of the garrison died	
992 CE	Battle of Rodda	Tailapa II, the Western Chalukya ruler, attacked the Chola Rajaraja		The Western Chalukyas were able to capture 150 war elephants from the defeated Chola Army

Table B (continued)

Date	*Names of battles and sieges*	*Size of forces involved*	*Casualties*	*Remarks*
27/28 November 1001 CE	Battle of Peshawar	Mahmud Ghori had 15,000 cavalry, while Jaipal commanded 12,000 cavalry, 30,000 infantry and 300 elephants	Jaipal was captured and 5,000 of his soldiers died	
1194 CE	Battle of Chandawar	Mahmud Ghori had 50,000 cavalry and Raja Jaichandra's strike corps comprised 300 elephants		Jaichandra was defeated and killed
1299 CE	Battle of Killi	Between three and five *tumen* were under Qutlugh Khwaja's command. Ala-ud-din Khalji commanded the Delhi Sultanate field army	One-third of the Delhi Sultanate's field army was wiped out, and the Mongols suffered 5,000 casualties and then retreated	
20 December 1305 CE	Battle of Amroha	Ali Beg and Tartak commanded 40,000 Mongol cavalry. The Delhi Sultanate field force numbering 30,000 cavalry was commanded by Malik Nayak/ Kafur	The Mongol Army lost 20,000 horses and then retreated	
20 April 1354 CE	Battle of Malda	Firuz had 30,000 cavalry and Haji Ilyas had 10,000 cavalry and 50 elephants		Ilyas was defeated but his army was not destroyed

Table B (continued)

Date	*Names of battles and sieges*	*Size of forces involved*	*Casualties*	*Remarks*
12 December 1398 CE	First Battle of Delhi	Mallu Iqbal commanded 4,000 armoured cavalry, 5,000 infantry and 27 elephants		The Delhi Sultanate Army under Mallu Iqbal was defeated and retreated inside Delhi
18 December 1398 CE	Second Battle of Delhi	Sultan Mahmud Tughluq and Mallu Iqbal commanded 10,000 cavalry, 40,000 infantry and 125 war elephants		The Delhi Sultanate Army was completely defeated
19 May 1520 CE	Battle of Raichur	Ismail Adil Shah deployed 50,000 cavalry and 250 elephants; Vijayanagara had 32,600 cavalry and 551 elephants (including war elephants and those for logistical purposes)		Adil Shah was defeated
16 December 1525 CE	First Battle of Panipat	Babur had 12,000 cavalry and Ibrahim Lodhi had 100,000 men (infantry, cavalry and non-combatants)		The Lodhi Army was destroyed
16 March 1527 CE	Battle of Khanwa	While Babur had 12,000 cavalry (heavy and light), Rana Sanga deployed 80,000 horses		Rana Sanga was killed and his army was scattered
October 1530 CE	Battle of Surajgarh	Sher Khan had 30,000 cavalry		The Afghan Army of Bengal Sultanate was defeated

Table B (continued)

Date	*Names of battles and sieges*	*Size of forces involved*	*Casualties*	*Remarks*
1540 CE	Battle of Bilgram/ Kanauj	Humayun commanded 100,000 cavalry (definitely an overestimated figure) plus mortars (including 21 heavy mortars), and Sher Khan/ Farid had 50,000 soldiers		Humayun was defeated
7 October 1556 CE	Third Battle of Delhi		Hemu's force suffered a loss of 3,000 men and 400 elephants	The Mughal Army under Tardi Beg was defeated
5 November 1556 CE	Second Battle of Panipat	Hemu had 30,000 cavalry and 500 war elephants		Hemu was defeated and executed
5 January 1565 CE	Battle of Raksha-Tangadi/Talikota	Vijayanagara Army had 2,300 hand-held firearms and cannons		The Vijayanagara Army was crushed by the combined forces of the Deccani Sultanates
3 March 1575 CE	Battle of Tukaroi	Daud Khan had 60,000 Afghan and Hindu soldiers		Munim Khan, the Mughal General, was able to defeat Daud
February 1580 CE	Siege of Daman	Mughal General Qutub-ud-din Khan with 15,000 soldiers conducted the siege		The Mughals failed to capture the Portuguese fort due to lack of siege artillery
1615 CE	Battle of Bharali	The two Mughal commanders Sayyid Hakim and Sayyid Abu Bakr commanded 10,000 cavalry and infantry (numbers not known) and some 400 ships	The Mughals lost 5,000 killed, 9,000 were wounded and 3,000 soldiers and mariners deserted	The Mughals were defeated by the Ahoms

Table B (continued)

Date	*Names of battles and sieges*	*Size of forces involved*	*Casualties*	*Remarks*
15 April 1658 CE	Battle of Dharmat		Raja Jaswant Singh, the Mughal General of Shah Jahan, was defeated and 6,000 soldiers in his force died	Aurangzeb emerged victorious
29 May 1658 CE	Battle of Samugarh	Dara commanded 50,000 soldiers		Aurangzeb defeated Dara
4–5 January 1659 CE	Battle of Korra/ Khajwa	Aurangzeb commanded 90,000 cavalry		Shuja was defeated
10 March 1659 CE	Battle of Deorai	Dara commanded 20,000 cavalry and infantry		Dara was defeated
1663 CE	Mir Jumla laid siege to Manaha Fort with 30,000 infantry			The Ahom Army was ravaged by cholera and, further, the Mughal infantry had a larger number of hand-held firearms. The Ahoms vacated the fort
26 November 1738 CE	Battle of Khyber Pass	Nadir commanded 22,000 men (including 10,000 light cavalry), and Nasir Khan the Mughal *Subadar* had 20,000 Afghan tribesmen and 7,000 Mughal regular soldiers		Nasir Khan was defeated

Table B (continued)

Date	*Names of battles and sieges*	*Size of forces involved*	*Casualties*	*Remarks*
24 February 1739 CE	Battle of Karnal	The Mughal Army was comprised of 100,000 combatants (including Sadat Khan's contingent), about 130,000 non-combatants and 2,000 elephants for logistical purposes	Nadir's force suffered 2,500 killed and 5,000 wounded, and the Mughal casualties were 30,000	The Mughal Army was defeated

Note: After consulting different sources which give varying numbers for each case, we give the average for particular battles and sieges. The sources are cited in the endnotes of the main text. And due to lack of data several important battles and sieges could not be included in this table

Glossary

Acharya Brahmin teacher/scholar

Ahadis Soldiers recruited and paid direct by the Mughal Emperor

Amir Turkish noble

Aryavarta Ganga-Jamuna Doab

Badshah Muslim ruler

Ban Hand-held rocket. It was comprised of a bamboo tube which was filled with gunpowder. The latter was lighted and used to propel burning arrows towards the enemy. Also known as *hawai*

Baniya Also known as *modi*. The term means Hindu trader/merchant and belonged to the Vaishya (third rank in the pecking order) caste

Bherighosa Blowing the kettledrums to signify launching a military campaign

Brahmavarta Land of five rivers (Indus, Jhelum, Chenab, Ravi, Beas and Sutlej), i.e. Punjab

Brahmin Highest caste in the Hindu *varna* system; theoretically, they are supposed to engage only in reading, learning and in worship of Hindu gods and goddesses

Camu Term for a big army

Chakravartin Emperor or ruler of the whole earth

Chaturanga Bala/*Chaturanga Vahini* Four-limbed ancient Hindu army comprising of infantry, cavalry, chariots and elephants

Cos A traditional unit for measuring distance. One *cos* (also known as *kos*) was about 1.4 miles or about half a league

Crore One crore is 10 million or 100 lakhs

Dam 40 *dams* = Rs 1. *Dam* was used as a unit for revenue collection in the Mughal Empire from Akbar's reign to Shah Jahan's

Dhamma Buddhist religion

Dhammaghosa Spread of *dhamma*

Durbar Court of an Indian ruler

Farman Order issued by the Mughal Emperor

Ferangi Literally meaning Franks. This term referred to all the West Europeans who came to Mughal India

Gajnal Small field gun drawn by elephant; also known as *hathnal*

Ghazis Holy warriors of Islam. They were volunteers who joined particular expeditions

Ghulam Slave of the Sultan. They filled the army and also higher administrative posts. Also known as *mamluk*

Harem Household, including women

Howdah Seat at the back of the elephant. It was generally a wooden box with a cushion and later was iron plated

Iqta Assignment of land revenue to an *amir* for maintaining a particular cavalry contingent

Iqtadar Holder of the *iqta* assignment

Jagir Assignment of land revenue of a particular piece of land in lieu of salary

Jaladurga River fort surrounded by water on several sides and constructed to control the river channels and creeks

Jauhar The practice of a widow self-immolating on the funeral pyre of her husband. This practice entered India from Central Asia

Jezail Long-barrelled musket used by the Afghan and Pathan tribes. The *jezail*'s range was greater than the muskets used by the sepoys of British-officered Indian Army during the nineteenth century

Jihad Holy war by the Muslims against the infidels

Kalapani Crossing the sea, which results in loss of caste for the caste Hindus

Khalisa Literally meaning crown land; it means land directly administered by the Mughal central government

Kheda Elephant branch of the British state in India

Kshatriya They come second in the caste hierarchy. Their caste occupation involves soldiering. The Kshatriya is below the Brahmin but above the Vaishya.

Mahajanapada Large territorial unit

Mahout Elephant driver

Mamluk Elite slave soldier of Islam

Man A unit of weight which varied from 40 to 80 pounds

Mansabdar Holder of a *mansab* (an imperial rank). A *mansabdar* was granted a transferrable *jagir* for maintaining troopers for service with the Mughal Emperor

Mir Bahr Mughal admiral

Mlechcha The ancient Sanskrit term for designating foreigners, i.e. those outside the fold of Hinduism. They might mean Sakas or Arabs.

Modi Hindu businessman

Nala/Nullah Small shallow stream

Paigah Horses which were bred in the studs controlled by the sultan's/monarch's central government

Paik Hindu infantry equipped with non-gunpowder weapons

Paksa Flank or side

Peshwa Prime Minister of the Hindu polity, i.e. the Marathas

Pilkhana Elephant establishment of the medieval Muslim rulers of India

Rajadharma Duty of a righteous Hindu king/ruler/raja

Rupee One rupee (Rs) was equivalent to £2 sterling and 6d (pennies) in the mid-seventeenth century

Samanta Feudatory ruler who accepted the suzerainty of the emperor and ruled as a semi-autonomous governor of an outlying province which happened to be his native kingdom

Sastra Literature/learning

Satrap Governor of a province originally in the Achaemenid Empire. Later the Greeks, Kushanas and Sakas adopted this system. The governor controlled both the military force as well as revenues in the province.

Satrapy A province/region in charge of a *satrap*

Sena At times it refers to a tactical unit and occasionally also an army

Senapati Hindu commander of the army

Sirdar Chieftain

Suba Mughal province

Subadar Governor of a Mughal province. Originally he controlled only the military force and not the finance of the province, which was under the *diwan*

Thanadar Mughal police official in charge of a *thana* (police outpost)

Topasses Offspring of Portuguese men and Indian women

Tumen This was a unit in the Mongol Army equivalent to a division. One *tumen* comprised theoretically 10,000 horsemen

Vijigishu An ideal Hindu emperor of ancient India

Vyuha Battle array of the ancient Hindus

Wazir Principal Minister of a big Muslim polity

Yagna Hindu ritual involving the use of fire and *ghee* (clarified butter) and chanting of *mantras* (hymns for the gods and goddesses) by the Brahmins

Yantras Machines

Yavanas A particular type of *mlechchas*, i.e. Greeks. This term is derived from the word Ionians

Zamburak Small field gun attached to the back of a camel. The camel knelt down when the gun was fired. The *zamburak* was the Asian equivalent of Western field artillery

Zamindar Generally a Hindu landlord

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