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ARTICLE

Battle strategies of the Ahoms of Assam

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Abstract
Although there are multiple studies related to the Ahom rule in Assam, only a few focus on Ahom military structures and their victories against the Mughal and other contemporary rulers. Even among the latter works, technological progress and the use of weapons have taken primacy, while strategy and its formulation by individuals, particularly women, have been neglected. In this paper, an attempt has been made to address the lacuna, thereby consolidating the studies of the military history of medieval northeastern India, in general, and Assam, in particular. As a result, on a theoretical plane, the paper tries to move beyond technologically determined frameworks of historiography as provided by Marxism and other related ideologies.

Keywords Ahoms · Assam · Battle · Canon · *Paiks* · Barphukan

1 Introduction

There are studies related to various aspects of the Ahom rule in medieval Assam, including their military organization and successes against the Mughals and contemporary neighboring ruler. These studies primarily situate the Ahom military as an institution and elaborate on technological progress, mentioning the weapons used. However, the study of Ahom military strategies and the role of individuals/or women in formulating and executing them has been understudied so far. Thus, this paper aims to fill this gap in the existing research, contributing not only to the military history of Assam but also to a broader understanding of warfare in medieval northeast India.

This paper attempts to reconstruct the warfare of the Ahoms of medieval Assam, moving beyond the traditional study of military technology from a nuts-and-bolts approach. This approach has primarily focused on the technology, including weapons, accoutrements, machinery, fortifications, and all the physical relics of war-making. In other words, the study of military technology in the past has been a curious preoccupation, reflected in the long line of technical treatises devoted to, or prominently featuring, the tools of war, both old and new, mundane and exotic (Hacker, 1994).

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The paper also attempts to examine the often-debated aspect of war strategy and weapon studies from two broader perspectives: evolution versus revolution (Roy, 2015; Nath, 2019). The evolution of technological systems involves a continuous back-and-forth movement along the spectrum of activities, as well as movement up and down through the hierarchical structure of the system itself (Klein & Kleinman, 2002, p. 230).

Furthermore, the social contribution of technology will be considered in the context of the role of individuals/women, in war strategies, drawing on a study conducted in medieval France. Medieval women certainly performed important ancillary functions to support crusading and military projects in numerous logistical, practical, and organizational ways. Though not a piece of physical equipment, most strategists would agree that intelligence is an essentially military tool, and there is historical evidence of women acting as intelligence gatherers and spies (Harwood, 2020, pp. 121,137).

While discussing the evolution of technology within military organization approaches, the paper also emphasizes the use of technology in the military system from a broader perspective, encompassing the combined use of the army, navy, and other aspects. While Ramesh Buragohain and Sanjeeb Kakoty have focused only on technological and economic determinism to analyze technological progress. According to Van Inwagen, technological determinism is the perspective that is based on the past and present state of technological development and the laws of nature. Technological progress is the only feasible future direction for social change. This implies that once technological processes are initiated, they

necessitate certain forms of organization or allocation of political resources, regardless of their social desirability or previous social practices(Smith and Marx, 1994, p. 83).

The paper comprises five sections. The first section provides a review of the literature; the second section discusses aspects of fortification, focusing on the use of natural resources and indigenous knowledge systems, as well as the changing dynamics of fortifications, particularly due to the Mughal inroads. The third section of the paper discusses the use of weapons and the combined efforts of the army and navy in warfare, while the fourth part examines the role of women and certain individuals in the Ahom battle strategies. The last, the fifth one, is in the form of a conclusion.

2 Review of literature

Technological development began in the world during the Neolithic era when people learned to apply techniques in their daily lives. With the establishment of permanent settlements, individuals started creating tools to facilitate the smooth functioning of society. The need to protect and expand territories led to large-scale wars, contributing to the rise of empires. Indian history has witnessed numerous wars fought on its land. These wars led to the rise and fall of many kingdoms and empires. As armies and weapons were the basic instruments of war, various tactics related to their use also evolved over the centuries. Advanced modes of combat were devised, and new methods related to the use of various weapons were perfected. However, far more important were the strategic and tactical concepts that the Indians perfected over the centuries. Citing from various Indian texts, the author highlights the war techniques of India. Iqtidar Alam Khan (2004) surveys the history of gunpowder and firearms in India in his book, tracing their arrival in the thirteenth century from China and in the late fifteenth century from Europe, and examining the role played by the Mongols and the Portuguese in this transmission. Alongside this narrative of the diffusion of firearms, the book examines their impact on the nature of fifteenth-century regional states and the Mughal Empire in the sixteenth and seventeenth centuries.

Human history reveals a reciprocity of action between fighting on the one hand and the use of arms and equipment on the other. These were evolved through successive ages by human ingenuity as aids to the strife and conquest of the environment as well as man. Interdependent are military equipment, military organisation, and military technique. Not all new weapons, but those with higher military potential generate new war methods, and these, in turn, change the organisational structure, size, and character of the army. Correspondingly, new needs are created for newer arms, which are supplied by science and technology (Sarkar, 1984, p. 11).

Numerous classifications of weapons, based on their characteristics, mode of operation, and function, have come down to us from Ancient and modern writers. Kautilya divided them with regard to their form and characteristics, such as those which were immovable or movable, those with edges like “plough-share” or razors, bows and arrows, swords, stones, and armour. (Bhakari, 1981, p. 92.)

In the Medieval era, as with today’s world, there was a veritable arms race. Better weapons begot better armour begot better weapons, and so on. Much of the weaponry and tactics were rooted in their classical equivalents from Roman times. Even defences, from concrete to quick constructions of forts, were lost. Thus, it is that a great deal of medieval military technology was rooted in the past (Ramsey, 2017, p. 259).

In this context, the Ahoms played a significant role in the technological development of Medieval Assam. The Ahoms migrated from Yunnan Province and sought to establish their rule in Assam. To achieve this, they first strengthened agricultural practices in the Brahmaputra Valley. Notably, they were the first to introduce wet rice cultivation in Assam. Many scholars, including Amalendu Guha (1991), Jahnabi Gogoi (2002), and Sanjeeb Kakoty (2012), have discussed the technological advancements brought about by the Ahoms, particularly from an agricultural perspective. Other scholars, such as Bharat Chandra Kalita (1988), and Khagen Gogoi (2017), have examined the Ahom military as a whole. Their writings primarily discuss the Ahom military as an institution, without focusing on social formation and general aspects of technological progress and/or the evolution of the military system.

Ramesh Buragohain contributed to the state formation of the Ahoms. He focuses on the political, social, and administrative structures that led to the rise and consolidation of the Ahom Kingdom in Assam. His research delves into how the Ahom rulers, from their arrival in the thirteenth century to their establishment as a dominant power in the region, developed a complex state apparatus. Buragohain's work delves deeply into the administrative structures of the Ahom kingdom. Ramesh Buragohain’s (2006) work on the state formation of the Ahoms provides a comprehensive view of how the Ahom dynasty established, expanded, and maintained one of the longest-lasting and most influential kingdoms in the history of Assam. By focusing on military, administrative, cultural, and religious factors, Buragohain paints a detailed picture of a complex state that was able to navigate diverse challenges, both internal and external. His work remains foundational for understanding the intricacies of Ahom political history and governance.

Sanjeeb Kakoty (2012) discusses the Ahom period in his book. This book covers the aspects of social formation, technology, and mode of production. In warfare and the army,

the author discusses the paik system and its role in the production system and warfare. It also reflects the extension of war weapons during the Ahom rule and technological improvement in military systems. However, the military strategy of the Ahoms has not been discussed in this book.

3 Fortification, use of natural resources, and the indigenous knowledge system

From Palaeolithic times onward, the parallel growth of social and technological progress becomes easier to trace. Technologists have served society by producing machines, materials, products,systems, and services. Most tools and artifacts can be described as products; the chisels, hammers, or rounded stones used to produce them can be classified as machines. The anthropological, archaeological, and historical evidence of stagnant societies and their lack of technological innovation tend to argue for a closer and more intense interaction between the two. However, technological innovation is not to be taken in a very narrow sense. There have been intensely active societies that have not innovated techniques but new thoughts; others have been promoters or diffusers of ideas (Thakur, 2005–2006, p. 801).

The Ahoms were engaged in hostilities with the external and internal powers. Before discussing the course of military operations between the two opposing powers, i.e., the Mughals and Ahoms, it is necessary to have an idea about the origin, technique, and method of different strategies and tactics, i.e., the construction of roads, ramparts, forts, and check-posts, which helped the Ahoms in achieving their success. The Ahoms, during their six-hundred-year tenure, consolidated the state. This is evident from the archaeological remains, which demonstrate their proficiency in structural activities, thereby strengthening the military department (Hussain, 2004, p. 117).

The battle strategies of the Ahoms were also supported by the region's geographical and natural features. The topography, hills, rivers, and dense forests of Assam provided the Ahom forces with natural defence potentials. However, there are instances when offensive strategies were also adopted by them, such as in the Battle of Itakhuli (Singh, 2024, p. 450).

There are several important hill complexes in the city, including the Sila-Fatasil hill complex, the Nilachal hill complex, the Sonaighuli complex, the Kalapahar-Narakasur hill complex, and the Japarigog-Narengi-Kharghuli hill complex. Apart from these, there are the Kamakhya-Pandu hillock and the smaller hillocks at Maligaon and Lakeshwar areas on the western end of the city.

Fortifications or ramparts constructed by the Ahoms were known as *garh*s. The ramparts were constructed at strategic places, such as at the tops and sides of hills, the nodal points like confluence of rivers or along the opposite banks of rivers like the Brahmaputra, i.e. twin forest, the passes (*duar*s) in Kamrupa and Darrang, junction of roads or routes of transport and also on river beds, embankments, especially on the Brahmaputra. Thus, Ahom's forts were of three types, land forts, water or marine forts, and hill forts. River forts were called *Panigarh*. The construction of *Panigarh* was fascinating, as it was built on deep water. Some of the most important forts constructed by the Ahoms on the north bank of the Brahmaputra were at Chamdhara, Singri, Srighat (also known as Saraighat), Agiathuti, and on the south bank were at Lakhugarh, Simalagarh, Kalibar, Kajali, and Pandu. Subsequently, Guwahati and Jogighopa were also fortified. Forts during the Ahom age were typically constructed with mud, bamboo, wood, and grass. Around the main chokehold, a strong wooden wall was constructed, featuring high towers equipped with guns and other ammunition. Surrounding the fort wall was a deep ditch with skirts of thick bamboo palisades, and sometimes the palisade was surrounded by a second ditch. It was adequately garrisoned and also supported by a powerful naval contingent as close to the nearest possible point as possible. The Assamese learnt the technique of constructing bridges of boats across the river Brahmaputra. Bamboo stakes (*panji*s) were fixed on the grounds and inside the pit (as at Jogighopa), and palisades of strong timber (as at Srighat) were also used. Another characteristic feature of the defences was the system of having twin fortifications on opposite sides of the Brahmaputra, e.g. Jogighopa and Pancharatam, Samdhara and Simugarh, etc. (Singh, 2024, pp. 450–451).

Guwahati can be topographically divided into two broad divisions: the hilly terrains and the plain areas (including North Guwahati). The prominent hilly complexes within the city limits can be grouped as follows: Sila-Fatasil Hill Complex, Nilachal Hill Complex, Sonaighuli Complex, Kalapahar-Narakasur Hill Complex, and the Japarigog-Narengi-Kharghuli Hill Complex. Apart from these, there are the Kamakhya-Pandu hillock and the smaller hillocks at Maligaon and Lakeshwar areas on the western end of the city.

Several military roads, embankments, ramparts, and fortifications were built not only to improve the communication system but also to resist the military operations of the invaders. The longest road constructed during the Ahom tenure is the one called Dhodar Ali's built by king Gadadhar Singha and starting from Garhgaon till Naharkatiya in the east, touching places like Simaluguri, Charaideo, Sonari, and others, extending to Kamargaon in the west, bringing within its fringe places like Nazira, Namti, Amguri, MarioniTitabor, Golaghat, and others where it joined the Cheuni Ali. The length of Dhodar Ali is almost 211 k.m. The early British rulers admired the wise selection of the alignment and direction of the roads so much that they wanted to keep

these open for all local traffic by repairing or improving them as necessary (Hussain, 2004, p. 117).

The Ahoms constructed ramparts, locally known as *Garh*, at strategic points of defense. They were built of mud and further strengthened by surrounding them with thorny bamboo. The ramparts were surrounded by deep moats called *Garkhawoi*, which were filled with water. This formed the second line of defence. Three walls surrounded the capitals. Other smaller areas, such as Dorika Nagar, Borkola Nagar near Gargaon, and Rajbari near Charaideo, were surrounded by ramparts. Embankments in Upper Assam, laboriously built over the course of centuries to guard almost all the rivers, served as bunds and, at the same time, also formed a road system. Robinson and Captain Jenkins emphasize the significance of these embankments and bunds as pathways for communication. Apart from the rampart-cum-road, there was an important road. Some of them were laid to restrict the entry of Nagas and other tribes, while some were laid to restrict the Kacharis and Jayantias. Some such important roads are Dhodar Ali and Dhai Ali (Sahu, 2016, pp. 289–290).

During the Ahom rule, Guwahati was considered the second capital, and as a result, necessary defensive arrangements were made to safeguard Guwahati from external invasion. A significant amount of information can be accessed and procured from the ruins and other historical sources regarding those embankments that acted as the defense circle of Guwahati. It is worth mentioning that during Lachit's tenure as Barphukan, many embankments on the mighty Brahmaputra or along its banks were ramparted and consolidated under his able guidance and supervision from 1667 to 1671. Before this, there were two embankments in Pandu and Saraighat. Later, during the reign of Siva Singha, some of the embankments were rebuilt or repaired (Konwar & Konwar, 2019, p .533).

The Ahom rulers constructed impregnable forts, which were of vital importance to the Ahom state. In the first Ahom-Mughal war, from 1615 to 1616, and the warfare from 1639 to 1663, the forts at Samdhara and Singri, i.e., the modern district of Darrang on the northern bank of the Brahmaputra, and Lakhugarh, Koliabor, and Simalugarh, Kajali, and Pandu on the southern banks were very important. During the Ahom-Mughal wars (1662–1671), Gauhati and Jogighopa were also fortified. A ditch, a wall, and thick forests protected Jogighopa. Its fort walls at the bottom were 9 yards wide at the top; the circumference in the interior was more than a league. It had strong towers. Gauhati, with its fortifications, constituted an impenetrable defensive wall, as held by Ram Singha, who led the Mughal troops against the Ahom forces from 1669 to 1671. The entire area was dotted with a long line of fortifications divided into several sectors and formed a separate unit under a gallant officer of proven efficiency. The Persian Chronicles have also left interesting details regarding these forts. Generally, mud, bamboo, and wood, and at times grass, were used in building up the forts. The main stronghold was surrounded by a strong wooden wall with 'high turrets mounted with powerful guns' on the top. A deep ditch with a fence of strong bamboo sticks surrounded the fort. Somewhere again a second ditch surrounded this palisade or the stake. Troops and war boats were constantly on the watch for the safeguard of the fort (Hussain, 2004, p. 118).

Sihabuddin Talish also described the fortification of Jogighopa. He stated that the fort of Jogighopa was a lofty and spacious one, and it extended up to the hills on the bank of the Brahmaputra. A big ditch or moat was dug at regular intervals to prevent the horses and the foot soldiers from advancing towards the fort. Moreover, sharp-pointed bamboo spikes placed in the ditch further resisted the enemy from crossing it. In fact, surrounding the fort with ditches with bamboo spikes made the fortification more effective. Sihabuddin Talish compared this fortification technique of the Ahoms with that of the Gunwar community in India, who also employed the same fortification technique. There were large and deep moats surrounding the Saraighat and Pandu forts as well. Interestingly, Ahom's intelligence in the field of military was reflected at the time of the construction of the Samdhara rampart. At the time of its construction, the Ahoms realised that a considerable amount of time would be required for the construction of the rampart, and the Mughals would be kept busy with negotiations. During the course of negotiations with the Mughals, the Ahom officers presented a peace proposal by offering them agarwood, an elephant, and other items the Mughals desired. However, when the construction of the Samdhara rampart was completed, the Ahoms took a different stand. They now told the Mughals that not a single item would be given to them and appealed to them to fight with them (Barman, 2019, p. 111).

The embankments were ramparted from Sukleswar or Barphukunghat in the south to Bharalumukh, Udmari, Amrajuri, and Pandu in the west. These embankments stretched through Tumoni Parbat, Duar Gorila, Perogliopa, Dhemakhirua, Gotanagar, Asur Ali, and Ushaharan Parvat to Uchata Simolu. Further, two additional embankments were constructed from Asur Ali to Gug Parvat and from Gug to Dupguri (Beltola). The embankment area that ranged up to Udmari was named Baligarh, and its length was 900 benches (1 bench = 2 feet). There were 50 canons placed in this region. The embankments from Pandu, extending towards the south and north-east, were ramparted in a bow-shaped structural sequence. These embankments stretched through Tumoni Parbat, Duar Gorila, Paroghopa, Dhenukhirua, Gotanagar, Asur Ali, and Ushaharan Parvat to Ubhota Simolu. Two additional embankments were rammed from *Asur Ali* to GugParrvat and from Gug to Dupguri (Beltola). Two additional embankments were constructed in the

northwestern part of Guwahati. Furthermore, an embankment by Brahmaputra was made from Pandu to Garigaon in the west. Additionally, there were two parallel embankments, ramparted from Gargaon (located opposite Agyathuri Pahar), parallel to Lankeswar. Of these, the west embankment can be located in the region stretching towards Khanajan or Dipor Beel. The east embankment, on the other hand, stretches eastward from the present-day Assam Engineering College campus towards Gotanagar. The embankment at the northern bank of Brahmaputra starts from Ashwakranta and stretches along the mighty Brahmaputra through Juriya Parvat towards Saraighat in the west. The length of this stretch was constituted by a conjunction of 900 benches (1 bench = 2 feet) and a provision for accommodating 1200 soldiers. From Saraighat, an embankment stretches through Kekurilathia in the north towards Sila Parvat. Adjacent to the present-day Amingaon, these embankments are known as Mumaikota Garh. From Sila through Garuda Pakhi (present-day Gauripur), Kalpai, Silbhoral, and Tikoriparbat, this stretch of embankments reached Sansari in the north. Another embankment begins at the Garudpakhi plains of Silaparbat, extending eastward towards Borola Parbat and Khatia, located in the Rangmahal region. It is connected to another embankment that starts at Manikarneswar, the meeting point of the Bornadi and Brahmaputra rivers, and stretches through Kanai Borokhi Bua Hil in the northwest towards Rangmahal in the north. The southern part of this embankment is known as Shah Buruj. Towards the north, and by the western bank of Bornadi, two parallel embankments were ramparted that stretched up to Dirgheswari and Mandakata Pahar. One of these embankments is known as Phulongorgarh. From this embankment, another one divides itself near Bilongonigaon towards the west to meet the embankment that stretches from Ashwaklanta to Sansari. In addition to these, forts were ramparted at Lathiyapahar, the central region Kuruwaparvat towards the eastern banks of Bornadi, and also near Agyathuriparvat in the west (Konwar & Konwar, 2019, pp. 534–536).

The total length of the defence circle of Guwahati during the time of Lachit Barphukan was approximately 73.64 sq. kilometers. Among these, the embankments of Jalukbari, Agiyathuri, and Kuruwa are not included in the above-mentioned length. It is only through a personal and field visit that one can accurately estimate and assess the hard work and sacrifices made by the Assamese people during Lachit Barphukan's time. The seventeenth century witnessed the construction of extensive defensive ramparts, which encircled the city on both banks. Some of these ramparts survive to this day (Konwar & Konwar, 2019, p. 535).

4 Combined use of weapons in warfare (Army and Navy)

Ahom weaponry consisted of both defensive and offensive war equipment. The defensive equipment consisted of *tupi* (a cap) to cover the head, *gati* (a thick jacket) for the upper body, and shields called as *Dhal* and *Baru*. The offensive weapons included swords, *yathi (*flat spears)*, da* (dagger)*,* javelins, guns, matchlocks, cannons, bows, and arrows, among others. However, gradually more sophisticated weapons, such as artillery, were added to the Ahom weaponry. The use of missiles attached with bows and arrows was evident. Before the annexation of the Bhuyan and Chutia territories, the Ahoms used the *karphai dhenu* (a large bow). However, after the annexations of these territories, the *chutia dhenu* and *bar dhenu* were collected and used by the Ahoms. The archers from Kamrupa were known for their accuracy and sharp shooting ability. The arrows were of different shapes and sizes, and they were poisoned at the tip. The variety of daggers included *mit da, nakoi da, kopi da, mesi da*, and the axe was also used for close combat. During wars, *hiloi* (matchlocks) were also used by the Ahoms. In the Ahom military, eleven types of matchlocks and five types of Bartupor Bortop (large cannons) were used. They were named as *gathiahiloi*, *jamburhiloi*, *ram-sangihiloi*, *saruhatnaliahiloi*, *kamayanhiloi*, *khukahiloi*, *basaraihiloi*, etc., and the Bartups were known as *biyagumbartup*, *hatimuriabartup*, *tubukibartup*, *mithahulung*, *baghmaratup*. Even these matchlocks were sometimes gifted by the local chieftains to the Ahom rulers. Chutia rulers gifted *mithahulung* matchlocks to Ahom king Suhungmung Dihingia. It is commonly believed that firearms in Assam were developed since the time of Turbak's invasion in 1532. However, according to the Assamese chronicles, the use of firearms was developed in Assam following the defeat of the Chutiyas by the Ahoms, and long before Turbak's invasion. They (Ahoms) were reported to have confiscated 69 firearms. Even Tavernier believed that the use of gun-power entered the kingdom of China through Assam. The Assamese were skilled in crafting various types of guns, including matchlocks, artillery, and large cannons. An officer named Khargharia Phukan was in charge of manufacturing firearms and gunpowder. It is also significant to note that gunnery and cannonry were not accessible to all, but were reserved for professionals (Singh, 2024, pp. 449–450).

There are various opinions about the introduction of firearms into Assam. Gait says that the Ahoms had learnt the use of firearms (cannons and matchlocks), after the Muslim invasion of their kingdom in 1532–31 CE. This view is shared by J.P. Wade, J.N. Sarkar, and S.K. Bhuyan. However, Tavernier believes that gunpowder was first invented in China, not Assam. The *Naobalcha Phukanar Buranji* contains a reference that Shu-ka-pha brought *hilloi* with him

when he made his entry into the Brahmaputra Valley. On the other hand, the use of *hilloi* by the Chutiyas of Sadiya is indicated by a reference in the *Assam Buranji*, which states that in 1522 CE, the Ahoms captured one thousand hilois from the Chutiyas. Evidently, the art of manufacturing firearms was already known to the Chutiyas. It was not unlikely that the Chutiyas, who were the neighbours of the Ahoms for about three hundred years, had acquired the secret of making *hilloi* from the latter (Phukan, 1973, pp. 123–124).

It is possible that gunpowder reached South India and Bengal through maritime trade with South China, and to Assam by land across Burma. As early as 1419, Chinese ships are reported to have brought firearms (bombarde) to Calicut. This underlines the possibility of gunpowder's arrival in South India and Bengal from South China by sea. Similarly, Travernier's (1662) reference to Assamese local traditions suggests that gunpowder and firearms were acquired by the people of Assam through contracts with China, indicating that gunpowder originally reached the Brahmaputra Valley from southern China via overland trade (Khan, 1994, p. 198).

Ahom King Sukapha established villages of iron-smelters, including iron smelting workshops, in this area. Remains of some iron-smelting furnaces can still be seen here. A large pond was also found there, which was likely dug by an Ahom monarch as a source of water during the iron smelting process. To date, small pieces of iron have been found scattered in the jungles of Tiru Hill (Jorhat). Until the nineteenth century, villagers in this locality would wander through these hills in search of iron pieces to produce agricultural implements. Due to the presence of many iron smelting furnaces and workshops, this place was known as *Tirulohakhat* (the place where iron is manufactured) (Baishya, 2009, p. 301).

Confronted by enemies within and without, Ahom rulers had to take a keen interest in the manufacture of war weapons. The *Satsari Assam Buranji* records King Chakradhvajasimha (1663–69 CE) personally supervised the making of guns and cannons. The inscriptions on a cannon discovered at Gauhati, now housed in the Assam State Museum, indicate that it was made by seven *ojah*s (experts) in Saka 1594 (1672 CE). Workshops were established at various locations under the supervision of experts (Phukan, 1973, pp. 124–125).

The blacksmiths were engaged in manufacturing weapons of war, including hilloi (matchlocks), top-bar-too (small and large cannons), swords, spears, dutas (a type of spear), arrow tips, spike nails, clamos, and many other items. The art of making cannon and matchlock reached a high state of perfection. Even the Mughals showered praises on the excellence of this art. Shihabuddin Talish writes that the Ahoms "cast excellent matchlocks and *bachadar* artillery and show great skill in this craft". Several types of cannons and matchlocks were manufactured in the Ahom kingdom. In 1662 CE, Mir Jumla found 675 big cannons, 1343 zamburaks, 1200 ramchangs, and 6750 matchlocks at Garhgaon. One of the cannons was so big in size that it discharged balls weighing three *mans*. All these bear clear testimony to the great development of the firearm industry in the Ahom kingdom (Phukan, 1973, pp. 122–123).

Along with the development of firearms, the manufacture of gunpowder attained considerable importance. In Assam, saltpetre was obtained mainly from three sources: a thick layer of nitre produced by cow urine in the cowshed, left undisturbed for a considerable period; ashes from banana plants; and bats' dung. Saltpetre, being an ingredient of gunpowder, the state monopolised the right to its collection and employed a number of persons who were called *Jakharia*s. In 1662, Mir Jumla found more than 4260 tons of gunpowder of excellent quality in the storehouse at Garhgaon. The General was so much impressed by the superiority and excellence of the stuff that he ordered the capture of some of the expert gunpowder makers to send them to Dacca (Phukan, 1973, p. 125).

Inscriptions of the Medieval period recorded some *Baruas*, who headed certain departments. The rock inscription of Saka 1589 refers to Numali Dekā Barua, who was one of the officers responsible for battles against the Mughals and the construction of a rampart. The inscription of Udayādityasimha of Saka 1598 refers to Nityananda Coladhara Barua, in connection with the manufacture of cannons. These officers were heads of minor departments, which had a Phukan at the head (Bhagawati, 1997, p. 133).

5 Cannons(*topas*) and Guns (*hillois*)

The Ahoms were great warriors they made different types of guns and cannons. Usually, the cannons were known as topas and the guns as hiloi. According to size, shape, and function, the cannons and guns were nomenclated variously. The following are some of the popular guns and cannons used by Ahoms (Baishya, 2009, p. 303) (Fig. 1).

Cannons (topas): There were different types of cannons or tops. The large cannons were known as *Bortop*. The Bortopswere again of five different types: Biyugombortop (a very large cannon), Hatimura or Hatimuriyabortop (an elephant-headed cannon), Tubukibortop (a Turkish cannon), Mithasolengbortop, and Baghmuriyabortop (a tiger-headed cannon) (Fig. 2). Guns (*hilois*): The Ahoms used 11 different types of guns for different purposes. These are: *Gathiahiloi, Pahlangihiloi, Ramchangihiloi, Hat hiloi* (hand gun), *Patharkalaihiloi, Kamayanhiloi, Jumurhiloi, Kechaihiloi,Toahiloi, Khokuhiloi, Bochadarihiloi.*

Fig. 1 Guns (*hillois*) and Bullets of the Bortopa (Cannon)

Fig. 2 Canon

Different types of bullets of different guns and cannons were made of iron found in Assam. There were special workshops and iron-smiths to produce bullets (*guli*).

The sword was possibly the common weapon of offence and defence in the days of Ahom in Assam. Large and small swords were equipped with sharp, strong, pointed blades with a mid-rib or medial ridge, and sometimes also had a tang. There were different names of the swords, such as: *Hengdang* (royal swords), *Tarowal*, (warrior's swords), *Sonia hengdang*(royal swords ornamented with gold), *Rupar hengdang* (royal sword ornamented with silver), *Chandrahans* (long bent sword), *Dumukhiatarowal* (double edged sword), and *Dakhar* (large sword). The spear (Jathi) was mostly used by the royal guards and armies. There were different types of spears, varying in shape and size (Baishya, 2009, p. 304) (Fig. 3).

Fig. 3 Sword, sacrificial knife, and *Nakoi Da* (a type of sword-like weapon)

In ancient Assam, a large number of iron-smiths were busy manufacturing arrowheads. During the Ahom and pre-Ahom periods, the arrow was the main weapon of war. A huge amount of arrowheads were manufactured for both offensive and defensive purposes. An arrow was also the primary hunting weapon. Every tribal family had a large number of different types of arrowheads in their house. The Ahoms used iron rods for fencing (*xingari*). Gorges and iron rod fencing invariably protected the Ahom forts. Materials used for horses and elephants include *khura* (horse shoe), *hatirtongior haoda* (elephant seat), *baghjari* or *lekam* (reins), *langching* (elephant pincher), *hati bandha sikali* (elephant chain), *rekabi* (saddle), etc. (Baishya, 2009, p. 305).

The Ahom Buranjis offer various insights into naval warfare. The technique of boat manufacturing was in an advanced stage in the early medieval times. Boat building was a flourishing industry in medieval Kamarupa, and iron, which was available in abundance from the Khasi hills, was largely utilized for this purpose. In the Tezpur grant of Vanamala (c. 832–855 CE), we find references to boats carved with designs and decorated with ornaments, which suggest that the carpenters of early medieval Assam were skilled workers with an artistic bent of mind. Sukavinarayanadeva, the medieval Assamese poet, provides fascinating details about the construction of boats in medieval Assam, suitable for use on the sea. Allowing a certain amount of poetical exaggeration, it cannot be denied that the craft of boat-building attained a considerable excellence of skill in

medieval Assam. The Padmapurana of Narayanadeva mentions both *kundar* (moulder) and *sutar* (carpenter) in connection with the construction of different types of merchant boats. Persian sources like the *Fathiya-i-Ibriyya* throw light on a war boat of Assam called a *bacharies*, which, according to the next, consisted of only one levelled plank, usually made from the heartwood of *chambal* trees. The Ahom kings encouraged the construction of boats of different sizes for civil and military purposes. During this period, canoes and large boats were also made. The canoes were manufactured out of trees which were hollowed out till only the outer skin about 'one inch and a quarter thick remained. If a large boat was required, the shell was plastered over with mud and streamed over a fire. The insertion of thwarts then descended the sides. If, as was usually the case, it split during the process, the rent was patched up with a piece of wood, fastened in place with clamps. In this way, boats 6 feet long and 7 feet in breadth were constructed, capable of lasting, if the wood is good forest timber, for 10 years or even longer. The iron clamps were used for boat building. Colonel Lister, writing in 1853, estimated that 20,000 mounds of iron were exported from the Khasi and Naga Hills in the shape of hoes to the Assam valley, where they were used by boat-builders for clamps. Boat-building was both a royal and a private enterprise. Places like Pandu, Gauhati, Kaliabar, Biswanath, Dikhoumukh, Rangpur, Gargaon, and Sadiya were important centres of boat building, established on the banks of rivers such as the Brahmaputra and Dikhou. The Ajhar (*Lagerstroemia speciosa*) and *Sam* (*Artocarpus chaplasha*) wood were adjudged the best for the canoes. Nowgong was an important centre of boat-building for which Sonaru (*Cassia fistula*), Titasapa (*Michelia chanipaca*), Gunseria (*Cinnamomum Glandu Hferum),* and Ajhar wood were used. The Assamese also used to build their boats of *chambal* wood, and such vessels, it is said, however heavily they may be loaded, did not sink in the water if they were swamped. These boats were manufactured in the shape of dugout canoes, which were floated down the Kapili, Jamuna, and Barpani rivers to Chaparmukh from Goalpara and Guwahati. It may be mentioned here that during the Ahom rule, the Noasaliya Phukan was placed in charge of the construction of different types of royal boats, and the adult population of Assam was divided into various *khel*s, having to render specific services to the state, and among them, the *khels* of boat-building and boat-plying people were also noticed. There was even a separate department of the king for procuring good-quality timber from the forests, under the officer Kath-Barua, which was utilized for various purposes, including the construction of royal boats (Dutta & Tripathy, 2001, pp. 328–330) (Fig. 4).

The physical features of the land and the genius of the people had greatly contributed to the development of the boat-building industry in Assam. Numerous streams intersected the valley. Big and small, boats formed the most convenient and quickest means of communication and transport in Assam during this period. The forests of Assam were abundant in hard and durable woods, most suitable for building boats; the boat-building industry made significant advances. According to M'Cosh, "a boat is as common to every house as a brass *lota*, or an earthen pot". The common people built their own boats; the state employed several thousand men called *Naosalias* for this purpose. J.P. Wade estimated the number at six to seven thousand. They were placed under the charge of the Naosalla Phukan, an officer of high rank. Boats were built in the dockyards called

Fig. 4 Iron Boat

*Naosalla*s. There were ten such dockyards. The *Bar Naosal* at Rangpur, the *Sakbarinaosl* at Garhgaon, the *Charaibarinaosal* at Majuli, the *Negherinaosal* at Dergaon, the *Trimohaninaosal* near Kaliabar, and the *Guahatinaosal* in Kamrup were well-known. Every year, many boats of different shapes and sizes were built in these dockyards. *Baharistan-i-Ghaybi* records that in a naval engagement with the Mughuls, the Ahoms pressed into service four thousand war boats. In the naval battle at Kaliabor in 1662, fought against the invading Mughal army under Mir Jumla, the Ahoms had overwhelming superiority in number. 700 to 800 ships of the Ahom navy engaged 100 imperial boats near Kukurātatā (Phukan, 1973, pp. 126–128).

Various types of boats mentioned in literature are: *bachari*, a war boat resembling the *kosah* of Bengal, which was manned by 60 to 70 men. Its head and base were consisted of one flattened plank, while the *doon* was extremely high *khelnao*, or pleasure boat of about 50 feet long and 3 feet wide, *holongnao*, built of one piece of wood, *charanao* of about 120 cubits in length and 5 to 6 cubits in breadth with both ends very high, and manned by 100 to 120 persons, *mārnão*, or two or more boats tied together. Waqisnavis at Gauhati reported no less than 32,000 boats arriving at that place, of which more than one-half belonged to the Assamese. Boats were built for both war and transportation purposes, as well as for the use of royalty and officers (Phukan, 1973, p. 129).

The Assamese infantry also earned a high amount of appreciation even from the invading forces. In the guerrilla warfare technique, they made the enemy's life miserable. The mountainous terrain facilitated the construction of forts, which, along with other natural barriers, played a crucial role in repelling external invasions. After examining all aspects of political, economic, and strategic issues, the king in council would determine the objectives of the upcoming confrontation, and the armed forces officers would be briefed appropriately. The rulers did not regularly maintain the vast army. However, during an emergency, the entire nation could be mobilized to meet the enemy. This is an indication of the concept of 'nation in arms'. The Assamese soldiers also used most of the weapons used by people in other parts of India. Records say that the Assamese were expert archers using poison on arrow tips. Several authorities attest to the manufacture of gunpowder during the Ahom period. Tavernier, in his Assam travelogue, observed that the people of Assam invented gunpowder in ancient times, and guns were exported from Assam to Pegu and from Pegu to China. From China, it spread to other parts of the world, thereby giving the Chinese credit for inventing gunpowder. Shihabuddin Talish mentioned that the weapons of war used by the Assamese included matchlocks, cannons, arrows with or without iron heads, short swords, spears, and longbows and crossbows. In the time of war, all the inhabitants of the kingdom had to go to battle, whether they wished it or not (Kalita, 1988, p. 120).

In the northeast, cavalry and heavy artillery were mostly irrelevant. Light infantry and river boats equipped with cannons were the dominant weapons shaping warfare. Elephants, rather than camels and mules, were of prime importance as logistical vehicles for moving through jungles, nalas, and riverbanks. Most of the time, the advance of the armies followed the course of the rivers. River warfare also involved the construction of forts and the attack of 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 (Roy, 2024, p. 185).

It was in comparison to the modern technological achievements, the building of roads and communication systems in a medieval atmosphere, was, however, facilitated by certain favourable factors, such as cultivation of wood and bamboo crafts, technological developments in iron smelting and production of various iron implements, such as swords or long knives (*dao*) and hoe (*ker*/*kodal*), development of building technology with the use of masonry, production of writing materials and above all, man power resources bound to the state by law to work whenever they were directed (Baruah, 2015, p. 105).

In an earlier context, it was said that boats were the most numerous form of transportation in Assam during the period under study. There were different types of boats- long, short, wide, and narrow. There were selected classes of woods used in boat-making. Expert craftsmen crafted the design and sizes of boats, and the availability of various woods of different sizes and qualities in Assam's forests facilitated such design. Sometimes boats were cut out of a single piece of wood when the piece was sufficiently large. However, people could also construct large boats by joining wooden planks together. U.N. Gohain has written about boat-making technology in Assam as follows: Canoes were manufactured out of trees, which were hollowed out until only an outer skin about one inch and a quarter in thickness remained. If a large boat was required, the shell was plastered over with mud and steamed over a fire, and the insertion of thwarts then distended the sides. If, as was usually the case, it split during the process, the rent was patched up with a piece of wood fastened in place by clamps that held its beveled edges to those of the aperture. The boats were 60 feet long and 6 or 7 feet in breadth, and were constructed (Baruah, 2015, pp. 108–109).

The Ahoms possessed a brilliant and efficient naval power, which proved immensely helpful during the war due to the region's prolonged rainy season. The naval power of the Ahoms was exhibited during the historic war of Saraighat and Kaliabar. The Assamese war boats were usually termed as *bachari*s. The Assamese war boats were very strong and durable. These boats were also equipped with

large guns and cannons and could carry 70 to 80 soldiers at a time. The numbers of boats reaching and passing Guwahati in a single month was 32,000. Naosaliya Phukon was the supervising officer of the navy under Ahom administration. He was entrusted with various activities of the naval force. The smaller workshops of the navy were known as *Naosal*s and were located in old metropolises such as Garhgaon, Jaipur, Majuli, and Dergaon. In contrast, the central workshop, called Barnaosals, was initially located in Garhgaon and later transferred to Rangpur (Singh, 2024, pp. 444–446).

The Ahoms concentrated on strengthening the defensive positions around Guwahati. 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 numerically superior, firepower-heavy Mughal force. The Mughals engaged in a costly, gradual warfare in the Guwahati 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 to their forest hideouts. Atan Burhagohain, located on the north bank of the Brahmaputra, was put in charge of organizing the raiding parties (Roy, 2024, p. 186).

6 Role of women in the battle strategies of the Ahoms

In the monarchical system of government, women were generally not given a share in the country's administration. In spite of this, many Assamese women were not lagging behind in contributing to the administration by shouldering responsibilities as viceroys, governors, regents, and managers of different institutions. Some ambitious women even manipulated political authority. They either ruled the country directly as rulers or deftly influenced court politics from behind the scenes. Some of them even fought gallantly as the head of the troops showing their valour on the battlefield (Rahman, 2018, pp. 41–42).

The Ahom princesses took a prominent part not only on ceremonial occasions; some of them exercised considerable influence on state affairs. The women in the Ahom period played very prominent role in almost every aspect of political life. They played an important role as administrators or heroic soldiers on the battlefield. According to historical sources, it is evident that Tao-Khamti (1380–1389) was the first woman to play a direct role in administration when the king was at war. However, she failed to manage the administration because she did not receive any help or cooperation from the ministers of the Ahom kingdom. Another lady of the Ahom period who played a vital role in the state affairs was Queen Chao Shin Kunwari, consort of Ahom king Suklenmung (1539–1552). She was a Nara princess and the daughter of Magaung, the chief. She was intelligent and a learned lady. She emerged as one of the principal advisers to King Suklenmung, making significant contributions to Ahom politics. At the advice of the queen, King Suklenmung had shifted his capital to Gargaon and erected a rampart around the capital city (Gogoi, 2022, p. 131).

In the Ahom-Mughal conflict of 1636–38, during the reign of Ahom King Pratap Singha (1603–41), not only the Assamese men but also the womenfolk of Assam were eager to join the royal forces of the Ahom king to fight against the Mughal enemy. When the Ahom army, under the leadership of Momai-Tamuli Barboruwa, seriously defeated the Mughals in October 1638 on the banks of the Bharali, the defeated Mughal soldiers retreated to Gauhati. According to the Buranjis the Womenfolk started beating the fleeing Mughal soldiers with bamboo rods. On the battlefield, Ahom women fought alongside Benya and Jor against the enemies (Gogoi, 2017, pp. 119–120).

During the rule of Dihingia Raja Suhungmung, Turbak Khan invaded Assam at the head of a strong army. Phrensenmung was the Ahom commander entrusted with the responsibility of moving forward to stop Turbak. Initially Ahoms achieved success, but later in a battle fought in Kapili, they had to suffer heavy losses, including Phrensenmung and eight other generals who achieved martyrdom. The wife of Phrensenmung, Mula Gabharu, upon hearing of her husband's valiant death, moved to the battlefield and inspired the Ahom soldiers by fighting against the invading forces. Mulagabharu died fighting the enemy forces, but the example of patriotism, valour, bravery, and courage inspired the Ahoms, who finally defeated the Enemy. Turbak was killed, and his head was buried on the top of Charaideo Hill (Hazarika, 2015, p. 49).

In 1661, Mir Jumla had sent a detachment under Rashid Khan to Assam. Rashid reconquered Kamrupa till 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 prevent the Mughals from advancing to Kamrupa. The new Ahom general appointed in charge of defense 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. On January 4, 1662, Mir Jumla began his march towards Assam. The Mughals' lack of topographical knowledge and the absence of cooperation from

the local zamindars of Assam, particularly in the supply of provisions and guides, hindered the Mughal advance and caused hardship to the troops. Mir Jumla decided to follow the course of the Brahmaputra. Dilir Khan, the commander of Mughal Advance Guard, and Mir Murtaza, Chief of Imperial Artillery were ordered to cut a path along the riverbank. The thick and strong Khagra reeds were crushed and then uprooted by the elephants and men. All these fatigued the musketeers and foot archers. Mud further slowed down the march of the cavalry. The daily rate of march of the Mughal Army was about four to five miles. On January 17, Mir Jumla halted five miles west of Jogigupha, a fort at the junction of the Manas and Brahmaputra rivers. Most of the Ahom river forts were made of mud. The western environs of the Jogigupha fort were 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 January 20 (Roy, 2024, p. 182).

7 Conclusion

According to Amelendu Guha, the transition of tribes to statehood in Northeast India was varied in terms of time and space. The kingdoms of Assam emerged as a sovereign state in medieval times and survived until the early nineteenth century. The kingdom offers us the opportunity to study the problem of state formation in depth. To any study of the transition from tribalism to statehood, both history and social anthropology can contribute: the former by examining extant records and recorded oral traditions, and the latter by scrutinizing the fossilized traces of the process that are still evident within the tribal social structure (Guha, 1983, p. 2).

From the above discussion, we can conclude that the Ahoms, who migrated from the province of Yunnan with a small number of people and limited resources, successfully established their stronghold in Assam. Technological development played a crucial role in the rise of the Ahom Empire. Their success resulted not only from adopting new technologies but also from adapting them to their unique environment. This capability enabled them to expand their territory and defend it effectively. They gradually transformed into a powerful and expansive empire in Assam. One of the key features of this transformation was the Ahoms' ability to adopt and innovate technologically, particularly in warfare, agriculture, and administration. They introduced wet rice cultivation in Assam, which made the state self-sufficient. This allowed them to focus on other aspects of governance. By understanding the geography of Assam, they took advantage of the natural resources and boundaries the land offered. The dense forests of Assam enabled the Ahoms to defend themselves effectively against their enemies. By acquiring resources from various regions within Assam and neighbouring areas, they were able to consolidate their power and transform their rule from a small tribal governance to an empire.

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