

Drawing the Line: Cartography, Surveying and Colonial Boundary Formation in Colonial Assam

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Abstract:

The 19th century British colonization of Assam brought significant and lasting changes to the region's political landscape. A key part of this shift was the establishment of strict borders, replacing the previous fluid and often contested territorial definitions. This process was closely tied to the use of cartography and surveying, which appeared objective but were essential for creating, legitimizing, and enforcing colonial boundaries in Assam. This paper examines the crucial, though often overlooked, role these fields played in shaping territorial control. Rather than viewing mapmaking as a simple reflection of reality, this study investigates how cartography and surveying actively defined, marked, and allowed for the domination of territory. It reviews the approaches taken by British surveyors and cartographers, illustrating how their work impacted traditional socio-economic systems, access to resources, and the daily lives of Indigenous communities. Through a detailed exploration of the relationship between the claimed objectivity of scientific knowledge, the harsh realities of colonial power, and the experiences of local populations, this paper argues that cartography and surveying were not neutral tools. Instead, they were powerful instruments used by the British colonial government to shape and reinforce their authority over Assam. Their use fundamentally changed the region's territorial identity, altered its connections to the outside world, and significantly affected the lives of its people, resulting in a legacy that remains relevant today. This paper will discuss how this process redrew borders and created new social and economic divides, solidifying British dominance and transforming Assam into a vital part of the British Raj.

Keywords: cartography, surveying, colonialism, Assam, inner line, boundary demarcation, boundary disputes.

Introduction:

At its core, colonialism aims for territorial control, and asserting authority over newly acquired lands requires more than just physical presence. Cartography involves defining, marking, and managing these conquered spaces. In this effort, cartography—the art and science of mapmaking—and surveying—the exact determination of locations and land measurements—became essential tools. Maps served as "imperial technologies" (Edney, 1997), providing a way to visualize vast territories, simplify administration, and ultimately control colonized lands. They turned vague regions into clear landscapes that the colonizers could easily understand and manipulate.

Assam, a northeastern region with historically changing borders and complex social dynamics, offers an insightful case study. In Assam, cartography and surveying were

deliberately and strategically used to turn the region into a clearly defined and manageable administrative unit for the British. The fluidity of Indigenous spatial concepts was systematically replaced by strict colonial measurements. This paper will investigate the specific methods used in Assam, analyzing how the British colonial government applied these techniques to not only understand but also reshape the region's spatial organization. Additionally, it will critically examine the profound and often disruptive impact of these practices on Assam's indigenous communities, their traditional landholding systems, and their established ways of life, emphasizing how the seemingly objective act of mapping became a powerful tool for colonial power and social change.

Objectives:

This paper aims to achieve the following objectives:

1. To analyze the historical development of cartographic and surveying practices in colonial Assam under British rule.
2. To investigate the relationship between cartographic knowledge and the strengthening of colonial power in Assam.
3. To show how colonial boundary formation affected the social, economic, and political lives of the people of Assam.
4. To explore the environmental impact of colonial boundary formation and its connection to forest management and resource extraction.

Methodology:

To effectively meet the main goals of this research, both analytical and historical research methods have been used. The data for this study comes mainly from secondary sources, such as academic books, scholarly journals, reputable newspaper articles, and other relevant publications. This research carefully examines and assesses the various data available to provide a well-rounded understanding of the topic. The aim is to combine the gathered information into a coherent narrative that highlights key issues and adds to existing knowledge.

The Pre-Colonial Spatial Landscape of Assam

Before the British annexation in the 1800s, Assam's borders were not the strictly marked lines preferred by colonial powers. Instead, they were dynamic, often disputed, and frequently renegotiated. The Ahom Kingdom, which ruled for nearly six centuries, primarily controlled the rich agricultural land of the Brahmaputra Valley. However, the Ahoms lost significant power at the edges of their territory, especially in the mountainous and heavily forested tribal areas surrounding the plains. In these zones, the Ahom control was mostly indirect, maintained through tribute and political agreements rather than firm territorial commands (Guha, 1991).

These fringe areas were defined by their flexible and unclear boundaries, which led to overlapping claims and intricate systems of exchange and shared responsibilities among different communities (Baruah, 1999). Indigenous communities managed their resources and defined their territories based on established customs. They traditionally used natural features—such as rivers, watersheds, and prominent hills—as boundary markers instead of the abstract and often arbitrary lines that later appeared on European maps. This natural ambiguity, although practical and well-understood locally, was viewed as a barrier to effective administration and unregulated resource exploitation by a more structured regional framework. The British regarded this lack of fixed borders as a chaotic system that hindered their efforts to maximize profits and strengthen their political control. This fundamentally different view of space led to significant conflict and disruption as the British tried to reshape Assam's geography (Das, 2011).

The Colonial Imperative for Order: Introduction of Cartographic Control

The arrival of the British in Assam during the early 19th century triggered a major change in the way the territory was understood and governed. In contrast to pre-existing indigenous views, which were often fluid and based on customary land use and social interdependencies, the British introduced a modern, rational approach. Guided by scientific principles and the needs of a growing colonial bureaucracy, they emphasized the critical importance of accurate maps and clearly marked boundaries for effective administration. This focus stemmed from a strong belief that imposing order on what they perceived as a disorganized landscape was necessary for the smooth running of their colonial operations, including revenue collection, natural resource exploitation, and strict law enforcement (Gilmartin, 1994).

The Anglo-Burmese Wars (1824-26) marked a significant turning point in this transition. The conflicts culminated in the Treaty of Yandabo (February 24, 1826), which resulted in the cession of Assam to the British East India Company (BEIC). These treaties not only gradually integrated Assam into British rule but also signaled the beginning of a focused effort to systematically survey and map the new territory. The British recognized that a complete understanding of Assam's geography was essential for effective governance and control.

The initial surveys conducted shortly after the acquisitions were quite basic. These early expeditions mainly served as reconnaissance that gathered foundational information about the land and identified strategically important locations, such as navigable rivers, mountain passes, and possible military sites. However, as the British solidified their control and set up a more stable administration, they began more ambitious and systematic surveying programs aimed at creating a more detailed and accurate representation of the landscape.

The Great Trigonometrical Survey of India was a monumental effort aimed at meticulously mapping the entire Indian subcontinent, extending its reach into the largely unexplored territory of Assam. This ambitious survey, which took several decades, used advanced instruments like theodolites and chains and applied complex mathematical techniques to create a dense network of accurately measured triangulation points. This network formed the

basis for creating precise topographical maps (Phillimore, 1945). The thorough work of the Great Trigonometrical Survey provided the British administration with an unprecedented level of geographical knowledge, enabling them to exert greater control over Assam's land, resources, and people.

Key Players and Institutions: Shaping the Colonial Map of Assam

The cartographic conquest of Assam, a systematic effort to map and survey the region, involved several key figures and institutions. Thomas George Montgomerie, the Surveyor General of India, oversaw the entire operation, providing strategic guidance. Field surveyors like Godwin Austin, known for his meticulous surveys of the Naga Hills, and H.L. Thuillier, recognized for his extensive mapping of the Brahmaputra Valley, played significant roles in creating detailed topographical maps. These surveyors faced numerous challenges, navigating difficult terrains, dealing with logistical issues, enduring harsh conditions, and sometimes encountering resistance from local populations, all while striving for accurate geographical representation.

Beyond the Survey of India, the Forest Department, established in the mid-19th century, played an important role in mapping and surveying, particularly in marking forest reserves (Guha, 1989). Primarily motivated by the need to secure valuable timber resources for commercial use, the Forest Department relied on precise mapping to identify, manage, and control these resources. This emphasis on resource extraction shaped the department's surveying priorities and influenced the overall cartographic understanding of Assam.

Additionally, the Land Records Department was crucial in defining property boundaries and land ownership, ensuring land records and assessing revenue. Their work involved cadastral surveys, focusing on accurately measuring and mapping individual land parcels. This process of delineating landholdings contributed to the individualization of land tenure, a significant shift that transformed traditional community-based land ownership practices in the region (Siddique, 2004). The Land Records Department's cartographic work, therefore, had major social and economic implications, changing the relationship between individuals, communities, and the land.

Techniques and Technologies: Transforming Assam's Landscape into Data

Mapping colonial Assam was a multifaceted undertaking that used a mix of surveying methods and emerging technologies to convert the region into a space that could be easily understood and governed. Triangulation formed the backbone of this process, creating a precise geodetic framework for accurately representing the land. This involved building a network of interlinked triangles across Assam to allow exact calculations of distances and positions. Alongside triangulation, plane tabling, a direct graphical surveying method, helped create detailed topographical maps in the field. Surveyors used a plane table and alidade to visually document and map terrain features, contours, and other spatial characteristics. For smaller-scale surveys, particularly those related to land ownership and revenue collection (cadastral mapping), chain surveying proved helpful. This simpler method used chains and compasses to measure distances and angles, providing the necessary data to outline property

boundaries and create land records. The emerging field of photography, despite being in its early stages, also helped improve the accuracy and efficiency of mapping by providing visual documentation of specific areas.

Even though these surveying techniques were viewed as scientifically advanced at the time, they had limitations and reflected inherent biases. The challenging physical environment of Assam often affected the accuracy of the surveys. Dense vegetation, especially in forested areas, obstructed visibility and complicated line-of-sight measurements. Rugged terrain, including hills and complex river systems, created logistical challenges and increased the chances of mistakes. A lack of adequately trained personnel, particularly those familiar with local terrain and conditions, also influenced the quality of the resulting maps. More importantly, the introduction of Western surveying methods frequently overlooked existing local knowledge and Indigenous spatial understandings. This disconnect between colonial maps and the lived experiences of the Assamese people could lead to inaccuracies and misunderstandings in representing the landscape, ultimately contributing to the displacement and dispossession of local communities (Harley, 1988). These constraints highlight the need to critically examine colonial maps. We should recognize them not as objective reflections of reality but as constructed artifacts influenced by specific power dynamics and agendas.

The Impact of Cartography on Boundary Demarcation and Enforcement

Colonial surveyors in Assam used maps as vital tools to establish and maintain colonial borders. These maps did more than just depict the land; they defined the extent of British rule, created administrative regions, and resolved territorial disputes with neighboring kingdoms and indigenous groups. They functioned as governance tools, actively shaping the political, economic, and social landscape in ways that have lasting effects today.

- **Defining the Inner Line:** The 1873 Inner Line Regulation clearly shows the power of cartography, setting a boundary with significant implications. Officially, it aimed to protect tribal populations from exploitation by restricting British subjects from trading or acquiring land near Assam without permits. However, the creation of the Inner Line relied on British surveys, not on existing social or cultural divisions (Mackenzie, 1884). This mapping established a clear division between the plains and the hills, creating an administrative barrier that limited tribal communities' access to resources and lands they had depended on for generations. Initially meant as a temporary measure to manage interactions, the Inner Line solidified into a strict boundary, becoming a permanent part of the political landscape. This change significantly impacted the economic opportunities and cultural practices of various populations. The line emerged as a strong symbol of colonial authority, controlling the movement of people and goods while wielding considerable power.

- **Demarcating Forest Reserves:** Driven by a relentless demand for timber and forest products, the Forest Department expanded significantly and relied heavily on maps to locate and establish forest reserves. These areas, rich in resources sought by the colonial government, were often superimposed on lands traditionally used by indigenous communities for hunting, gathering, and shifting agriculture. The carefully defined boundaries of these

reserves, as shown in maps, had serious negative effects. This mapping process led to the forced relocation of communities, greatly limiting their access to essential forest resources necessary for their survival. It also criminalized long-standing practices crucial to their way of life. This loss of access to ancestral lands devastated their traditional economies and social structures and eroded their cultural identity, which was closely tied to their relationship with the natural world (Guha, 1989). Ultimately, the mapping of these forests represented a systematic dispossession of land and a disruption of established ways of life, all masked as efficient resource management.

- **Resolving Territorial Disputes:** Colonial maps had purposes beyond local governance; they were key in resolving boundary disputes between British authorities and neighboring kingdoms like Manipur and Burma. Often created from incomplete or biased data gathered through superficial exploration and viewed from a colonial perspective, these maps were strategically used to support British territorial ambitions and justify colonial expansion (Allen, 1905). The power of maps allowed the British to present their version of territorial reality as objective and definitive, effectively silencing alternative viewpoints and reinforcing their dominance. These cartographic decisions were often made without input from local inhabitants, leaving a lasting impact on the region's geography and shaping international borders while creating future conflicts and instability. Therefore, these maps were not just passive portrayals of existing landscapes; they were active tools used to construct a new territorial order that favored colonial powers.

The Social and Political Consequences of Cartographic Control

The imposition of cartographic control over Assam during British colonial rule brought significant social and political consequences, reshaping the region's landscape and the lives of its people. This control, exercised through thorough surveying, mapping, and boundary marking, was a powerful means of consolidating colonial power and transforming indigenous land systems.

- **Dispossession and Displacement:** The systematic mapping of Assam by colonial authorities led to the dispossession and displacement of indigenous communities. The colonial government created reserves, forests, and administrative districts, often ignoring established indigenous land claims and resource rights. A key aspect of this mapping control, the Inner Line Regulation, acted as a barrier, limiting the mobility and economic opportunities of tribal populations within designated areas. This restriction disrupted their traditional economies and deepened existing inequalities, creating a sense of grievance and marginalization among these communities (Barpujari, 1981). Defining territorial boundaries became a tool for exclusion and dispossession for those outside the colonial definition of legitimate ownership.

- **Erosion of Traditional Land Management Practices:** Colonial mapping led to cadastral surveys aimed at establishing individual land ownership. Although presented as a way to create a more modern and efficient system, these surveys critically undermined community-based land management systems that had sustained indigenous populations for generations. The shift to individual land ownership resulted in land loss for these communities,

concentrating ownership among a privileged few, including colonial officials, plantation owners, and wealthy individuals. This unequal distribution of land worsened social and economic inequalities, leaving many formerly self-sufficient communities vulnerable and dependent (Siddique, 2004).

- **Reinforcement of Colonial Power:** In colonial Assam, cartography went beyond neutral scientific inquiry and became a powerful tool for control. The creation and dissemination of maps helped solidify the colonial power structure, reinforcing images of imposed order and territorial dominance. These maps visually represented the British claim to the land, lending legitimacy to their governance in the eyes of both the colonized and the colonizers. Presenting an apparently objective view of the land, the British systematically diminished indigenous understandings of land tenure and resource use. The act of mapping affirmed and projected British authority, making their claim concrete and tangible, thus reinforcing their perceived right to govern the area. Ultimately, maps became an essential tool for colonizers to understand, exploit, and dominate the territory.

- **Resistance and Negotiation:** Indigenous populations resisted colonial boundaries and associated policies. Many communities fought to protect their rights and ancestral lands, using various strategies. They engaged in armed rebellions, peaceful appeals, and legal challenges to overturn colonial policies. Beyond outright defiance, many groups negotiated with colonial authorities to secure access to vital resources, change oppressive policies, and gain recognition of their customary rights. These acts of resistance and negotiation show the ongoing conflict surrounding colonial mapping and the struggle for control over land and resources. The colonial project was never universally accepted or unchallenged (Das, 2011). It is vital to recognize the agency of indigenous peoples in shaping their destinies, even within the constraints of colonial rule.

The Legacy of Colonial Cartography in Post-Colonial Assam

Assam's modern political landscape and spatial organization are deeply influenced by the lasting effects of colonial-era cartography. The borders set during this time have largely persisted, affecting administrative systems, resource management, and the complexities of inter-state relationships (Baruah, 2005). A clear example of this lasting influence is the Inner Line Permit (ILP) system. Despite criticism over its limitations on movement and exclusionary nature, the ILP is still in place in several northeastern states, including Arunachal Pradesh, Nagaland, and Mizoram. This highlights the ongoing use of colonial spatial management strategies (Das, 2019; Sharma, 2017). Originally designed to regulate resource access and control interactions between colonial officials and indigenous communities, the ILP still significantly affects movement and resource access in the region.

Moreover, current discussions on land ownership and access to natural resources in Assam are closely linked to colonial-era policies. The colonial focus on individual land ownership and promotion of commercial resource exploitation at the expense of traditional community-based management systems has had long-term effects (Guha, 1999). As a result, contemporary Assam faces ongoing conflicts between various communities contesting land

rights and control over essential natural resources, reflecting unresolved issues stemming from colonial land tenure arrangements (Fernandes & Barbora, 2002). Historical displacement and changing demographics further complicate these disputes.

Additionally, the inherent limitations and biases of colonial maps are now under critical reassessment and academic scrutiny (Edney, 1997). Recognizing that colonial maps often justified territorial claims and facilitated resource extraction, there is a growing movement to deconstruct these representations and challenge their dominance (Harley, 1988). Increasingly, efforts are being made to reclaim indigenous knowledge systems and integrate local viewpoints on space and territory into cartographic practices (Singh, 2015). This initiative aims to create more fair and inclusive cartographic representations of the landscape, reflecting a broader societal commitment to decolonizing spatial understanding and empowering marginalized communities (Sundar, 2000). However, accurately representing the landscape through indigenous knowledge requires careful documentation and a thorough understanding of traditional ways of life in the region.

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