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"New Wine in New Bottles": Class Politics and the "Uneven Electrification" of Colonial India

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The introduction of electricity supply into urban colonial India in the late-nineteenth and early twentieth centuries coincided with the emergence of an Indian middle class debating its own identity and autonomy, and the development of "modern" and Westernised urban centres. This article examines how colonial plans for urban and domestic electrification were influenced by the class politics of the urban Indian middle class and its varied notions of nationalism, traditionalism and modernity. I investigate how the colonial government and promoters of electrical technologies responded to the opportunities and constraints of the urban Indian middle-class domestic sphere to refashion the language of electricity to be contiguous with the political and social exigencies of the emerging Indian middle class. Looking at the language of electrification that arose in the social, cultural and political contexts reveals how far class and identity politics were matters of importance in what has been termed "the uneven electrification of the British empire". While this paper concentrates on urban colonial India, it brings to light newer aspects of the place of electricity within processes of urban development and class politics, and vice versa, especially within the unsettled cultural and social backgrounds of colonial societies.

Introduction

This article follows from Ute Hasenöhrl's study of "Rural Electrification in the British Empire" in this volume. It attempts to supplement Hasenöhrl's examination of the multiple institutional and infrastructural factors and actors involved in "the uneven electrification of the British Empire"[1] by showing that one of the several reasons for the piecemeal electrification of colonial India was contemporary class and identity politics. Studying the period that Hasenöhrl terms as "enclave electrification" (1880 - 1930)[2], this article will show that the colonial government's primary focus on urban and domestic electrification was almost exactly parallel to and contiguous with the historical rise of an Indian middle class debating its own identity and nationalism. Urban and domestic electrification, it will be shown, were colonial responses to the social and political complexities within which Indian middle-class identity was discursively framed and shaped.

This article raises broader questions about the history of electrification in colonial India which, up until now, has been associated with an industrial narrative along political and economic lines. In discussing the history of electrification in colonial Madras Presidency, Srinivasa Rao and John Lourdusamy place

electricity at the centre of what Gyan Prakash terms as the "technology grid"[3] that served the colonial project in India. They remark that electricity, by powering other technological and industrial projects, "played an invaluable role in the sustenance of British power in India."[4] They also illustrate the debates and discussions on the electrification of Madras Presidency centred on industrial, economic and environmental factors, and the availability of natural resources. Rao and Lourdusamy assert that the colonial government used electrification only as a means of maintaining colonial power, and for providing the colonists a more sophisticated lifestyle than their colonial subjects.[5] Even Suvobrata Sarkar, in his study of electrification and the "growth of industry, utilities and research in colonial Calcutta"[6], states that the colonial government used electricity supply only for administrative, military and industrial purposes.

Studies such as those mentioned above, which follow the technology transfer, and large technological systems narratives, help explain the processes of electrification in colonial India.[7] They might also suggest a few reasons why, given the imperial and resource-intensive nature of electrification, there were disparities in rural and urban electrification. They, however, fail to explain why, even within urban areas, certain sections of the Indian middle class used electricity in their homes while others did not. This article focuses on hitherto unexplored questions of how electricity and electrification came to acquire a cultural, social and political significance in the class and gender politics of late-nineteenth and early twentieth century colonial India. In the first section, this article looks at the failed early attempts by British electrical engineers and manufacturers to introduce electricity and electrical machinery in Indian industries. Next, this article turns to promoters' attempts to compensate for the lack of industrial demand through urban and domestic electrification. Political and cultural resistance from anticolonial Indian traditionalists, however, required promoters to vigorously market domestic electricity supply and electrical technologies. Finally, in the last section of this article, I analyse the discourses of promoters and electrical engineers, who market domestic electrification as the rhetorical and technological solution to social and political issues of class identity. The deliberations of electrical engineers, promoters and the colonial government reveal a historical narrative contrasting prevalent assumptions in existing historical scholarship that electrification of Indian homes was never on the colonial government's agenda, or that it followed straightforwardly from industrial electrification. Overall, the focus of this study is not just an overview of the early years of electrification in India, but rather the ideas, value systems, hopes and fears that found expression through the language of electricity and that can be best understood within the contexts of the larger political and cultural environment of the late-nineteenth and early twentieth centuries.

"Slipping down the hillside"

The colonial government's plans to introduce electric lighting and machinery in factories from the 1880s onwards was met with resistance from Indian factory owners and politicians, who believed that electrification of industry was "the most suicidal step in the history of the industry the evil consequences of which would be immensely far reaching aye, more than people have any idea of at present." [8] Such opposition to industrial electrification resulted in several electricity supply schemes incurring huge losses for long periods of time, or completely failing. In 1905, *The Electrical Review* stated that in the period of soon after its installation in 1897, the Sidrapong plant in Darjeeling was operating at a loss:

> The annual municipal report for 1903-04 shows that the experience of the municipality in its electric lighting has not been a happy one. The installation, which cost Rs. 1,60,000 (or rather over £10,600) five or six years ago, has been worked at a loss throughout, while during the last financial year, another loan of Rs. 60,000 had to be raised in order to prevent the head works at Sidrapong slipping down the hillside.[9]

Even Sunila Kale observes that "within Bombay city, for the first three decades after electricity was introduced in the 1880s, its consumption remained limited; many of the early utilities that were issued licenses failed because of a lack of adequate financing, insufficient demand, and the high cost of fuel."[10]

Such losses and closures of electricity supply projects prompted several governmental and organisational initiatives to make electric lighting and machinery acceptable in Indian industries. This is illustrated in the activities of the Indian and Ceylon Chambers of Commerce which, in 1905, placed Selwyn Howe Fremantle, a member of the Indian Civil Service, on special duty to study labour supply in Bengal and the United Provinces. In the afternoon of 29 April 1909, Fremantle presented his findings to the honorary Viscount Middleton, the late Secretary of State for India. In his paper, *The Problem of Indian Labour Supply*, Fremantle called attention to the problems caused to industries by the attitudes and work ethics of Indian labourers.[11] Starting from the premise that "cheap labour is by its very nature inefficient, and cannot compete with labour-saving appliances", Fremantle proposed wider use of electric cutting plants in collieries and the construction of central power plants to provide electricity to coal fields.[12] He also suggested using electrical machinery in the cotton and handloom weaving industries, and in agriculture, and proposed better primary and industrial training to prepare Indian workmen to work more efficiently and handle electrical machinery.[13] Despite such governmental efforts, electrical engineers and organisations were, even as late as 1915, concerned about the lack of electrical machinery in Indian industries. In his article, *The Development of Electric Power for Industrial Purposes in India*, H. R. Speyer - a member of the Institution of Electrical Engineers - ascribed this to the hostile attitudes of Indian mill, factory and

colliery owners towards the use of electricity; strong competition from Continental European and American manufacturers; and lastly, the preference of electricity supply companies to supply electricity for street lighting instead of to factories.[14]

While electricity supply companies' focus on urban street lighting was considered by Speyer and other engineers as one of the factors responsible for the failure of governmental initiatives towards industrial electrification, matters were, however, quite complex in the case of urban street lighting. From the early 1900s onwards, the two largest municipal corporations of Calcutta and Bombay had begun experiments with electric street lighting, albeit as a means to augment electricity usage. While there were problems with existing gas-lighting schemes in both cities, gas was still preferable to the new electric lights that were both expensive and unreliable.[15] In 1893, the Standing Committee of the Bombay Municipal Corporation sanctioned Rs. 30,000 for trial electric lighting in the city; a decision that was highly criticised by members within the Corporation and newspapers alike, with the *Kaiser-i-Hind* writing: "Bombay is quite content with her gas-light…. There is nowhere any complaint touching darkness, albeit the gas is inferior."[16] The trials, however, failed rather spectacularly, and experts suggested a trial with oil, and investments in incandescent gas burners.[17] The much vexed question of "gas versus electricity" was, nevertheless, settled in December 1909 when, after years of trials and debates, the Government of Bengal "decided that the illuminant for Calcutta should be gas, [and] tenders were called for accordingly."[18]

Given the limited numbers of factories and public buildings using electricity, and the expenses faced by electricity supply companies, the creation of a constant electrical load was a major preoccupation for electrical engineers and suppliers. Faced with these demands, electrical engineers, promoters and suppliers shifted their attention to domestic supply, which they believed would provide an extremely promising market to support the limited demand for evening-time street-lighting with demand for domestic lighting and electric fans.

The Middle-Class Project

While making a case for domestic electrification in a lecture at the Civil Engineering College in Sibpur in March 1900, John Willoughby Meares - then Engineer-in-charge of the Sidrapong Hydroelectric Project in Darjeeling and, later in his career, the Electrical Adviser to the Government of India - emphasised how greater use of electricity was beneficial to both consumers and electricity suppliers. He asserted that since any excess electricity produced by an electricity generating plant could not be stored, plants could be run more efficiently in case of maximum demand and maximum output:

It needs no explanation for you to see that as the output of the station increases the price per unit diminishes, since the cost of management, labour, interest on capital and other standing charges remain practically constant, while even the variable items, coal &c., are used more economically when there is a large output.[19]

Electrification, especially of Indian middle-class households, could not just ensure the economic viability of electricity production and distribution; it also served an important role in the complex cultural and political machinations of British colonialism, Indian nationalism, and the identities of the Indian middle class. The promotion of electricity was, in many ways, a colonial strategic response to the cultural and political situations surrounding Indian middle-class identity and growing Indian nationalist sentiments. Electrification of Indian middle-class households, according to the colonial government and promoters, was crucial to promoting new social and cultural identities mostly based on Western conceptions of technological modernity. Moreover, through domestic electricity supply and electrical technologies, the colonisers sought to influence the colonised to mimic the attitudes and lifestyles of the coloniser. In his seminal study, "Of Mimicry and Man", Homi Bhabha argues that the coloniser allowed such mimicry, but did not allow the colonised to be by any means identical. More importantly, by allowing this mimicry, the coloniser did not absorb the colonised into the dominant or superior culture, but only created intermediaries and collaborators who could help in exercising and maintaining authority.[20] For certain sections of the colonised too, according to Bhabha, such mimicry was a means of accessing the same power as the coloniser and, in the case of the Indian middle class, an opportunity to create a cultural identity different to that of the colonial elite and the urban poor.[21]

In *Fractured Modernity: Making of a Middle Class in Colonial North India*, Sanjay Joshi shows that "being middle class was a project" that deployed new modes of political activity and new forms of social conduct in the material domain of the state.[22] The new middle class, Joshi argues, asserted its respectability by differentiating themselves from the older elite and lower classes using access to western-style education and new forms of communication to form their identity based on contradictory stances on "modernity". The middle class, on the one hand, were committed to social values like gender equality and meritocracy, while simultaneously using exclusionary principles of birth, rank and gender to enhance their status. Joshi writes: "Whereas the middle class activists borrowed heavily from Western Enlightenment ideas as they sought to marginalise the traditional elite of the city, their exclusion of the lower classes were based on much more traditional hierarchies."[23] Prashant Kidambi has also shown that the construction of the middle class was mostly linked to material contexts and economic indicators of income and occupation. Studying white collar workers and manual workers, Kidambi shows that both these sections shared grievances about wages and

work conditions during and after the First World War. The arguments of white collar workers, however, invoked their status as "middle class" in their attempts to distance themselves from manual workers. White collar workers argued that their material needs were different, since belonging to the "respectable" class required engaging in certain forms of consumption different to the lower classes.[24]

For both the colonisers and promoters of electrical goods, such Indian middle-class collaborators and mimics were considered to be both consumers and distributors of electrical technologies, especially in a period when Western goods and technologies, and the kinds of social or domestic reforms they represented, faced considerable opposition from anti-colonial traditionalist sections of the middle class.[25] The period in question in this study was also a period of growing anticolonial sentiments amongst different sections of the Indian middle class. Partha Chatterjee has shown that early anticolonial Indian nationalism focused on creating its own sovereign domain in the Indian household before its political battle with imperialism. According to Indian nationalists, studying and replicating Western conceptions of modernity in the outside world while protecting Indian cultural values, spirituality and identity within the Indian domestic sphere could help achieve nationalist sovereignty.[26] Anticolonial nationalists, mostly erudite members of the middle classes, used their literary skills to disseminate ideas of the ills of a Westernised modernity in India. They propagated stories and drama that found resonance among an educated audience.[27] The emergence of electricity as a scientific and technological phenomenon in colonial India from the 1880s onwards also resulted in anticolonial writers and dramatists integrating and exploring electricity in their fictional and satirical works. For several nationalist writers, the outcomes of electrification were not restricted to the physical effects of lightning and shocks; the western origins of electrical technologies were considered dangerous to Indian cultural values, lifestyle and outlook. Amarendranath Datta's *Majā* was one amongst many forms of traditionalist social drama that appeared during this period as part of a greater discourse concerned with the emergence of, and critical of, the new Indian middle class and its acceptance of Western technologies in Indian domestic spaces. A conversation in the satire between a young, Western-educated Indian girl and her father, where the girl demands that an electric light be installed in her room, is used by the author to depict an upheaval in the social order of the Indian domestic space resulting from the effects of Western education and modernity.[28] Such nationalist and traditionalist notions manifested themselves in the Boycott and *Swadeshi* movements, which urged Indians to use Indian goods, and drew large sections of Indian society to boycott the use of foreign clothes, utensils, foodstuff, and even technologies.[29] The Indian household, thus, became as significant a setting for a full-fledged political struggle as the streets and government offices.[30]

In order to make electricity acceptable in Indian domestic spaces, promoters of electrification were required to, therefore, focus on the social and political interests of those sections of the Indian middle class who they

believed would be more favourable to Western technologies in their domestic spaces. This would, nevertheless, require a profound reshaping in the realm of consciousness or, as the authors of In Our Work in the Nineteenth Century - a paper presented to Lord James of Hereford on 18 January 1900 - put it: "if steam and electricity are pouring new wine into the East, with its patient deep disdain of the Christian West, it is necessary that new bottles should be prepared for its reception."[31]

New Wine in New Bottles

In *Everyday Technology*, David Arnold shows that Western technologies such as the sewing machine, bicycle and typewriter, despite being technologies that related more closely to everyday life than power plants and electric pylons, did not simply arrive in Indian homes. Each of these technologies had to be marketed in innovative ways, focusing on their everyday associations with health, domesticity and gender. Mass advertising campaigns and their portrayal of these technologies as a means to a healthy and rewarding life were crucial in the acceptance of these and other "everyday" Western technologies by the Indian public.[32] From the work of Madhuri Sharma we can see how in fact advertisements for mass consumer products modified their language and iconography to reach a wider audience base. As Sharma observes, these strategies were most obvious in advertisements for medicines and health products, where Western manufacturers flooded vernacular newspapers with explicit claims, texts and imagery that drew on local cultural ethics and religion in order to "colonise the mind" of the Indian consumer.[33] For example, European manufacturers of baby food, in their attempts to promote their products to Indian mothers, incorporated both English and Sanskrit terminologies. Through the use of Sanskrit in the phrase, "sanjeevan-tattava-milk-food" (life-giving milk food), advertisers attempted to instil a sense of the purity and genuineness of the product while also communicating the product's suitability to Indian sensibilities.[34]

Electricity was, however, not a mass consumer product. Therefore, in contrast to the advertising of 'everyday' technologies and mass consumer products, promoters of electricity in India had to foreground certain notions of convenience and modernity that were particularly appropriate to the construction of Indian middle-class identity. The promotion of electricity, therefore, needed to focus not simply on catering to Indian sensibilities, but also on the importance of electricity to the middle-class's efforts to lead a more sophisticated and modern lifestyle. The electric fan, for example, as can be seen in advertisements collected in Ranabir Ray Choudhury's *Early Calcutta Advertisements 1875-1925: A Selection from The Statesman*, could facilitate entry of its Indian middle-class users into modern culture and economy. Such advertisements, usually containing images of British gentlemen consumers of the electric fan enjoying the cool breeze in a rather elite setting, depicted not only the kind of consumers fan companies aimed to serve, but also the kind of lifestyle that the electric fan could offer its British and Indian middle-class consumers.[35]

Unsurprisingly, perhaps, the reification of constant electricity usage in urban Indian households would have required changing prevalent Indian lifestyles and habits. Electrification, on the one hand, promoters argued, required modifications to existing everyday systems and processes within the domestic sphere in order to be thoroughly utilised and, on the other hand, was a force capable of effecting large-scale moral and social changes within the home. British promoters' marketing discourses were replete with the colonial ideology that the improvement of Indian society was based on Indian middle-class households' acceptance of electrical technologies. Proponents of electrification often made several references to replacing existing mechanisms or methods with more "modern" electrical technologies. This involved constructing concerns about the character of the urban poor most closely associated with the everyday lives of the British and the Indian middle class: the domestic servant. Concerns of domestic servants' dishonesty and laziness were, however, borrowed from domestic guidebooks and the British and Indian middle-class social circles, where the position of Indian servants within the domestic sphere was a symbolically significant yet uncertain one.

The domestic sphere, for British residents of India, was a "significant space intended to both constitute and to express the culture of an imperial power", and Indian servants within the Anglo-Indian[36] household played an important role in the affirmation of the Anglo-Indians' position as rulers.[37] The several guidebooks on household management available to elite female British residents in India, in addition to discussing a range of strategies to survive local conditions in India, and to furnish domestic interiors without access to the usual furnishings of an English home, also crucially discussed how the Anglo-Indian woman could maintain imperial rule within the domestic sphere by maintaining the unequal power relations between British women and their Indian servants. The everyday functioning of Anglo-Indian homes was, in many ways thus, compared to the administration of a colonial empire. As Flora Annie Steel and Grace Gardiner commented: "an Indian household can no more be governed peacefully, without dignity and prestige, than an Indian empire."[38] While the presence of Indian servants helped reaffirm bourgeois identity, and establish and maintain imperial domesticity, they were also seen as outsiders and inferior human beings. Nupur Chaudhuri, in her study of "Memsahibs and their Servants in Nineteenth-century India", shows how British women's household guides and writings on Indian servants within the domestic sphere reflected the influence of social Darwinism. British women's writings on Indian servants demonstrate that despite the hierarchical class system, further complicated by race, religion and gender issues, influenced the highly negative attitudes towards native servants, and the urban poor in general. Also, Chaudhuri adds, "by positioning the Indians negatively in relation to the British, they contributed to the imperial discourse."[39] Household guides too advised British women to carefully examine and observe their servants' behaviours and characters since, as *The Englishwoman in India* wrote: "native servants of all classes, good or bad, and

indifferent, require the most incessant supervision… It is but natural to expect them to pilfer small articles of food; rice, sugar, coffee, and every sort of oil are their specialities in this line."[40] That Indian servants stole at every possible opportunity was also an often repeated account in Anglo-Indian literature. In *Behind the Bungalow*, an 1899 publication describing life with Indian servants in an Anglo-Indian household, the author wrote of the Mussaul, or "the man of lamps"[41]:

> The Mussaul's name is Mukkun, which means butter, and of this commodity I believe he absorbs as much as he can honestly or dishonestly come by. How else does the surface of him acquire that glossy, oleaginous appearance, as if he would take fire easily and burn well? I wish we could do without him![42]

For the Indian middle class, however, the presence of servants in the domestic sphere served deeper social and cultural purposes. Indian middle-class self-identity in the late-nineteenth and early twentieth centuries was constructed through establishing hegemony over subordinate groups within the domestic sphere. The new intelligentsia used servants to define the place of the housewife within the family hierarchy. Servants helped establish middle-class hegemony and paternalism, and the nature and quality of the works they performed were often crucially linked to the housewife's character and status. The housewife's character, alertness and efficiency were also analysed in relation to servants' dishonesty and habits of stealing. While housewives were urged to be humane towards servants, they were also advised to believe that theft and dishonesty were natural attributes of servants.[43]

Echoing prevalent colonial and Indian middle-class attitudes towards the urban poor, John Willoughby Meares noted that electricity was advantageous for domestic lighting because it could not be stolen. He wrote that although oil had several advantages as compared to electricity, namely ease of transport and constant supply, electricity had "the advantage that even if stolen it cannot usually be sold."[44] Evident in his comments are an image of Britain where the public had accepted the modernity of electrification and a scathing criticism of the immorality of lower-class Indians. Meares contended that oil would not be used in Britain if electricity or gas were available, while "[i]n the East conditions are different, and the fact that electricity cannot be stolen and sold is an appreciable condition."[45] To put Meares's views into perspective, the use of electric lighting in domestic and public areas in urban India was not just for the benefit of electricity suppliers and producers, and the general public; it also served a moral purpose. Electricity took away oil and, according to Montague Massey (a businessman who lived extensively in Calcutta and Bombay from the mid-nineteenth century onwards), "the great temptation it afforded Gungadeen, the Hindu farash bearer, to annex for his own individual daily requirements a certain percentage of his master's supply."[46]

The traditional apparatus and servants that perhaps evoked the most complaints from electrical engineers were the manual punkahs and punkah-wallahs, respectively. Punkahs were old-fashioned fans used in houses in the Indian sub-continent. These fans, ranging from small hand-fans to complex systems of ropes and pulleys, were usually worked by punkah-wallahs in Anglo-Indian and Indian middle-class households.[47] Punkah-wallahs, consequently, shared the same spaces where their masters and mistresses were expected to sleep, work, talk or conduct private business.[48] Punkah-wallahs were, however, most criticised for falling asleep while pulling punkahs at night. In his 1896 publication, *Indian Sketches and Rambles*, J. Bowles Daly wrote that while the punkah-wallah was efficient for the first few hours of his service, the movement of the punkah would gradually become intermittent, and finally stop, resulting in shouts and complaints from the people they served.[49] In 1890, in a paper presented to the American Institute of Electrical Engineering, Wilfrid H. Fleming, an American electrical engineer, wrote that manual punkah were also both noisy and caused gas or oil lamps to flicker. Tellingly, Fleming's only solution to the problems of noise, the flickering of lights, and the presence of the punkah-wallah was to replace both manual punkahs and oil lamps with "noiseless motor fans and steady incandescents [respectively], thus enabling the Anglo-Indian to read and rest in comfort."[50]

Yet, there were many other aspects of political and racial importance in late-nineteenth century colonial India that deployed the electric fan to defend the prerogatives of the British. In the late-nineteenth century, the deaths of punkah-wallahs at the hands of their irate European masters had become tragically commonplace. The *Indian Daily News* of August 1893 writes: "Hardly a hot season in this country passes, but we read of the death from violence of one or more of that much-abused, but useful, class of menial, the *Punkha* coolie."[51] What provoked the ire of Indian nationalists, however, were the rather lenient sentences handed to the European offenders by European judges and juries. In a case that was widely covered by the newspapers in 1893-94, Private Rigby of the West Yorkshire Regiment, despite evidences against him for murdering a punkah-wallah who fell asleep on the job, was acquitted by the magistrate because post-mortem reports showed that the punkah-wallah died of an enlarged spleen that burst because of Private Rigby's assault. The Magistrate said: "Rigby has always borne as good character as any other. To imprison him would, in my opinion, be, notwithstanding the terrible but accidental consequences of his acts, altogether too severe."[52]

Figure 1. A punkah-coolie being kicked to death by his European master. From *Chitradarsana* (Bengali periodical), Vol. 1 (1890), page 9 (online version of the journal hosted by Cross-Asia Repository and Heidelberg University Library, while microfilm and paper copies of the journal are held by the archives of the Centre for Studies in Social Sciences, Kolkata, and the Bangiya Sahitya Parishat in Kolkata, respectively.

Several nationalist newspapers capitalised upon the incident to call for equality and impartiality in sentences for European and Indian offenders. The *Amrita Bazar Patrika* commented:

> In India, whenever an Indian is killed by the kick of a European, it is often predicted that the theory of spleen-rupture would be brought into requisition; and, as a matter of fact, this prediction is as often fulfilled! In the case of Private Rigby, assuming that the punkha coolie had a large spleen, it is an admitted fact that he died from the effects of five or six blows dealt out to him. And what would have been the punishment awarded, if the accused had been a native of India? Assuredly, transportation for life![53]

While the punkah-wallah was always the victim, it helped - at least for the colonial government and promoters of electricity - to create the paradigm of the slumberous punkah-wallah. Correspondingly, promoters adopted the electric fan to quell any criticisms of the government's mishandling of fatal punkah-puller cases. In 1895, R. J. Browne, an electrician of the British India Steam Navigation Company, said in an interview after his electric punkah machine was granted a patent:

> The machine is the essence of simplicity, and would be a boon to the Electric Supply Company as it would enable them to get a day load for their plant which otherwise would be lying idle all day. This machine should, we think, have a considerable future before it for use in barracks &c., where the punkha coolie is often the cause of much irritation to the men which infrequently leads to ill-treatment of the puller himself.[54]

A satirical commentary from *Amrita Bazar Patrika* in 1901, titled "Heat, as it affects the European" shows how the intolerable heat generated both by the sun and the seditious Bengali press led the colonial government to replace punkah-coolies with electric fans. The heat of the sun, it is said in the satire, resulted in punkah-coolies being employed and, despite the Europeans' efforts to keep them awake, the coolies slept. Even killing them now and then proved unsuccessful: "If one cooly was killed for his sleepiness, his successor proved equally sleepy, unconscious of the fate that had befallen the predecessor. The latest device, the electric punkha, has no doubt removed this difficulty to some extent."[55]

Conclusion

The cases presented in this article have shown that the electrification of colonial India was not a straightforward story of acceptance and a consequent move towards modernity. Furthermore, it has also revealed that the story is also not one based on clearly defined lines of acceptance of, and resistance to, a new technology. Electricity, as discussed in this article, was not simply accepted, resisted or promoted for its technological value, but because of the different social and cultural meanings attached to it by different social groups of colonial India. Studying the social, cultural and political contexts of electrification in colonial India redefines the predominant association of electricity with the state and the provider. Studies of electricity and electrification, especially in the colonial world, have examined the ways in which electricity was produced, distributed and controlled by individuals, businesses and colonial governments.[56] This article has revealed the strength of class and identity politics, especially that employed by the colonised Indian middle class, in determining the direction of the efforts of promoters and the colonial government.

While promoters sought to interest their subjects by presenting the West, especially Britain, as a model of technological and social modernity, the cases presented in this article demonstrate that the rise of the various sections of the Indian middle class, their contested ideas of nationalism and modernity, and their desire to separate themselves from the urban poor became central to the language of electrification. The existence of sections of the Indian middle class who promoters believed would, despite Indian traditionalist concerns of the threats that Western technologies posed to Indian cultural values within the domestic sphere, accept electrical technologies pushed marketing efforts away from industries towards the domestic sphere. While Indian industries did not accept promoters' authoritative claims of the inherent modernity and superiority of electrical technologies, the demand for electricity was driven in essence by contemporary class politics and conflicts around Indian middle-class self-identity. Finally, in this context, the "uneven electrification" of colonial India was as much a consequence of urban class politics as it was an infrastructural and technological issue.

[1] Ute Hasenöhrl, "Rural Electrification in the British Empire" (this volume), 1.

[2] Ibid., 5-7.

[3] Srinivasa Rao and John Lourdusamy, "Colonialism and the Development of Electricity: The Case of Madras Presidency, 1900-47", *Science, Technology and Society* 15, no. 27 (2010): 30. For the theory of the "technology grid", see: Gyan Prakash, *Another Reason: Science and the Imagination of Modern India* (Princeton: Princeton University Press, 1999).

[4] Rao and Lourdusamy, "Colonialism and the Development of Electricity", 30.

[5] Ibid., 41.

[6] Suvobrata Sarkar, "Domesticating electric power: Growth of industry, utilities and research in colonial Calcutta', *The Indian Economic and Social History Review* 52, no. 3 (2015): 357-389.

[7] For technology transfer from the West to the colonies, see Daniel R. Headrick, *The Tentacles of Progress: Technology Transfer in the Age of Imperialism, 1850-1940* (Oxford: Oxford University Press, 1988). For a study of the history of electrification from a large technological systems perspective, see Thomas P. Hughes, *Networks of Power: Electrification in Western Society, 1880-1930* (Baltimore: Johns Hopkins University Press, 1983).

[8] *Kaiser-i-Hind*, 7 August 1892, 3; Such articles criticising the modernisation and electrification of industries were a regular occurrence in the Indian nationalist press.

[9] *The Electrical Review* 56, no. 1416 (13 January 1905): 65.

[10] Sunila S. Kale, "Structures of Power: Electrification in Colonial India", *Comparative Studies of South Asia, Africa and the Middle East* 34, no. 3 (2014): 462. Also see: Sunila S. Kale, *Electrifying India: Regional Political Economies of Development* (Stanford: Stanford University Press, 2014).

[11] Selwyn Howe Fremantle, "The Problem of Indian Labour Supply", *Journal of the Royal Society of Arts* 57, no. 2947 (May 14, 1909): 510-524.

[12] Ibid., 518.

[13] Ibid., 518-519.

[14] H.R. Speyer, "The Development of Electrical Power for Industrial Purposes in India", *Journal of the Institution of Electrical Engineers* 53, no. 246 (1915): 601-602.

[15] There were several complaints from customers about the poor service provided by the monopolist gas companies in Bombay and Calcutta. Newspapers, general periodicals and technical journals regularly published public complaints. Despite being dissatisfied with the gas companies, municipal corporations, after comparing proposals from both gas and electric lighting companies, chose gas for street-lighting because it was a tested and familiar technology, and cheaper than electric lighting. See: "Corporation of Calcutta", *Amrita Bazar Patrika*, 17 April 1904, 9. Also see: "Gas versus Electricity: The Better Illuminant", *Amrita Bazar Patrika*, 13 April 1908, 9.

[16] *Kaiser-i-Hind*, 6 July 1890, 4.

[17] *Kaiser-i-Hind*, 5 February 1893, 7.

[18] "Lighting of Calcutta", *Amrita Bazar Patrika*, 18 November 1909, 7.

[19] J.W. Meares, *Electrical Engineering with particular references to Conditions in Bengal (Six Lectures delivered in March 1900 at the Civil Engineering College, Sibpur)* (Calcutta: Bengal Secretariat Press, 1900), 109. Archived in the India Office Records of the British Library, London (hereafter IOR): IOR/Asia, Pacific & Africa/V9417.

[20] Homi Bhabha, "Of Mimicry and Man: The Ambivalence of Colonial Discourse", *Discipleship: A Special Issue on Psychoanalysis* 28 (Spring, 1984): 125-133. Also see: Homi Bhabha, *The Location of Culture* (London: Routledge, 1994).

[21] Bhabha, "Of Mimicry and Man"

[22] Sanjay Joshi, *Fractured Modernity: Making of a Middle Class in Colonial North India* (New Delhi: Oxford University Press, 2001), 172.

[23] Ibid., 24.

[24] Prashant Kidambi, "Consumption, Domesticity and the Idea of the 'Middle Class' in Late Colonial Bombay", in *The Middle Class in Colonial India*, ed. Sanjay Joshi *(*Delhi: Oxford University Press, 2011), 138-139.

[25] In *Everyday Technology*, David Arnold studies European companies selling goods through local entrepreneurs and businesses. Parsis in Bombay became crucial as intermediaries because they were considered by Europeans to be the most Westernised amongst Indians. David Arnold, *Everyday Technology: Machines and the Making of India's Modernity* (Chicago: Chicago University Press, 2013), 71-72.

Even Suvobrata Sarkar has examined the role of Bengali entrepreneurs in the development of the electrical industry in Bengal. As in the case of Parsi entrepreneurs in Bombay, it was usually the Bengalis educated abroad, or those who were Westernised in their outlook, who set up businesses that either manufactured or distributed Western electrical goods. See: Sarkar, "Domesticating Electric Power": 365-386. Also see: Sarkar, "In Pursuit of *Laxmi*: Entrepreneurship, Industry and Technology in Colonial Bengal", *Archiv Orientální*, Issue 82.2, (2014): 263-295.

[26] Partha Chatterjee, *The Nation and Its Fragments* (Princeton: Princeton University Press, 1993), 3-14 and 116-134.

[27] See: Chatterjee, *The Nation and Its Fragments*; Prakash, *Another Reason*; Anindita Ghosh, *Claiming the City: Protest, Crime, and Scandals in Colonial Calcutta* (New Delhi: Oxford University Press, 2016).

[28] Amarendranth Datta, *Majā*, 1900 (translation by Partha Chatterjee in *The Nation and Its Fragments*, 122).

[29] Sumit Sarkar, *The Swadeshi Movement in Bengal* (Ranikhet: Permanent Black, 2010), 78-90.

Although historians place the genesis of the Boycott Movement in the opposition to the partition of Bengal from 1903 onwards, anti colonial campaigns to turn the public against British goods and technologies were commonplace in several Indian provinces, including Bengal and Bombay, since the late nineteenth century. The *Swadeshi* Movement also impeded colonial electrification projects in cities and towns across India. As the *Report on the Electric Lighting and*

Power Supply Scheme of Benares (1919) shows, the prospect of rich landlords, merchants, and important schools and colleges accepting electric lights and fans tempted three companies to supply electric power and equipment in Benares. All three attempts, between 1903 and 1919, failed owing to differences with local authorities, the rise of the Swadeshi Movement, and the First World War, respectively. See: C.A. King and B.C. Chatterjee, *Report on the Electric Lighting and Power Supply Scheme of Benares* (Allahabad: Indian Press, 1919), 2. (Archived in the India Office Records at the British Library, London. IOL.1947.b.617)

[30] Bipan Chandra, Mridula Mukherjee et. al, *India's Struggle for Independence* (New Delhi: Penguin Books, 1989), 129-133. Also see: Partha Chatterjee, "Colonialism, Nationalism and Colonised Women: The Contest in India", *American Ethnologist* 16, no. 4 (November 1989): 622-633.

[31] William Lee-Warner, Martin Conway and Arthur Rigg, "Our Work in India in the Nineteenth Century", *Journal of the Royal Society for Arts* 48, no. 2463 (2 February 1900): 220.

[32] Arnold, *Everyday Technology*, 122-126 and 146.

[33] Madhuri Sharma, "Creating a Consumer: Exploring Medical Advertisements in Colonial India", in *The Social History of Health and Medicine in Colonial India*, ed. Biswamoy Pati and Mark Harrison (Oxon: Routledge, 2009), 216.

[34] Ibid., 216.

[35] See "Advertisement for Swan Fan (1915)" in Ranabir Ray Choudhury, *Early Calcutta Advertisements 1875-1925: A Selection from The Statesman* (Calcutta: The Statesman Commercial Press, 1992), 429.

[36] While the term "Anglo-Indian" now defines a person with mixed British and Indian heritage, it was, in the nineteenth and early-twentieth centuries, generally used for an English person born or living in India.

[37] Robin D. Jones, *Interiors of Empire: Objects, Space and Identity Within the Indian Subcontinent, c. 1800-1947* (Manchester: Manchester University Press, 2007), 2.

[38] F.A. Steel and G. Gardiner, *The Complete Indian Housekeeper and Cook*, 5th edition (London: Heinemann, 1907), 7-9.

[39] Nupur Chaudhuri, "Memsahibs and their Servants in Nineteenth-century India", *Women's History Review* 3, no. 4 (1994): 556.

[40] Unknown (A Lady Resident), *The Englishwoman in India* (London: Smith, Elder and Co., 1864), 58.

[41] While the term "mussaul" originally meant a torch made of rags wrapped around a rod, it later came to be used for the servant usually male, whose duty was to light and feed the oil lamps in the houses of the Indian and British elite.See: Henry Yule and A.C. Burnell, *Hobson-Jobson: The Anglo-Indian Dictionary* (Ware, Hertfordshire: Wordsworth Reference, 1996, originally published in 1886), 601; for *punkah*: 742-743.

[42] EHA, *Behind the Bungalow* (Calcutta: Thacker, Spink and Co., 1889), 52.

[43] See: Swapna M. Banerjee, "Debates on Domesticity and the Position of Women in Late Colonial India", *History Compass* 8, no. 6 (2010), 455-473; Swati Chattopadhyay, "Blurring Boundaries: The Limits of "White Town" in Colonial Calcutta", *Journal of the Society of Architectural Historians* 59, no. 2 (June 2000), 154-179; Swapna M. Banerjee,

"Subverting the Moral Universe: 'Narratives of Transgression' in the Construction of Middle-class Identity in Colonial Bengal", in *Beyond Representation: Colonial and Postcolonial Construction of Indian Identity*, ed. Crispin Bates (New Delhi: Oxford University Press, 2006), 77-99.

[44] Meares, *Electrical Engineering*,102.

[45] Ibid., 114.

[46] Montague Massey, *Recollections of Calcutta For Over Half a Century* (Calcutta: Thacker, Spink and Co., 1918), 64.

[47] Yule and Burnell, *Hobson-Jobson,* 742-743.

[48] Swati Chattopadhyay, *Representing Calcutta: Modernity, Nationalism, and the Colonial Uncanny* (London: Routledge, 2005), 127.

[49] J. Bowles Daly, *Indian Sketches and Rambles* (Calcutta: Patrick Press, 1896), 64.

[50] Wilfrid H. Fleming, "Electric Lighting in the Tropics", *Transactions of the American Institute of Electrical Engineers*, Vol. VII, Issue I (November 1890): 168

See: J.W. Meares, *Electrical Engineering in India - A Practical Treatise for Civil, Mechanical and Electrical Engineers* (Calcutta: Thacker, Spink and Co., 1914), 102 [Archived in IOR: Asia, Pacific and Africa/T 3659].

Also: J.W. Meares, *Electrical Engineering Practice: A Practical Treatise for Civil, Mechanical and Electrical Engineers* (London: E. & F.N. Soon Ltd., 1917) [Archived in IOR: General Reference Collection 08755.C.I.]. This book was a revised edition of Meares's *Electrical Engineering in India - A Practical Treatise* (1914). It was similar to the 1914 edition in many respects, except for the added chapters on lighting in mines and the inclusion of the latest I.E.E. Wiring Rules 1916.

[51] *Amrita Bazar Patrika*, 6 August 1893, 6.

[52] "The Case of Private Rigby", *Amrita Bazar Patrika*, 3 September 1893, 3. The case of Private Rigby was covered from June 1893 onwards, and was also mentioned in the reportage of other cases of assault on punkah-coolies.

[53] ibid, 3-4.

[54] "An Electric Punkha Machine", *The Pioneer*, 5 September 1895, 4.

[55] "Heat, as it affects the European", *Amrita Bazar Patrika*, 16 May 1901, 4. The article was a plea for self-governance, urging the colonial rulers to return to the cooler climes of Europe and leave the governance of India to Indians.

[56] For studies on electricity and its associations with the state, individuals and businesses, see: Jonathan Coopersmith, *The Electrification of Russia, 1880-1926* (Ithaca, New York: Cornell University Press, 1992); Thomas P. Hughes, *Networks of Power: Electrification in Western Society, 1880-1930* (Baltimore, Md.: Johns Hopkins University Press, 1983); David E. Nye, *Electrifying America: Social Meanings of a New Technology, 1880-1940* (Cambridge, Mass.: MIT Press, 1990).

For studies on electricity in colonised states, in addition to the works on colonial India mentioned in this paper, see: Ronen Shamir, "Electricity and Empire in 1920s Palestine under British Rule", *NTM*, Vol. 24, Issue 4 (December 2016), 451-480.