EXPLORING DIGITAL HUMANITIES IN INDIA

Pedagogies, Practices, and Institutional Possibilities

Edited by Maya Dodd and Nidhi Kalra

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1

DIGITAL INFRASTRUCTURES AND TECHNOUTOPIAN FANTASIES

The colonial roots of technology aid in the Global South

Dhanashree Thorat

Introduction

> The point is not where you reside, but where you dwell.
> – Walter Mignolo, in *The Darker Side of Western Modernity*

This project on digital infrastructures in the Global South was written into being while I am, in fact, quite far from the geopolitical locus of my work; in Lawrence, Kansas instead of India. A bustling college town steeped in the counterculture movement of the 1960s and surrounded by sprawling fields of wheat and corn, Lawrence is likely unknown to my Indian interlocutors. I bring up my emplacement in the United States to reflect on my distance from the digital humanities (DH) community in India as well as offer some affordances of my current position in forging connections and alliances between different DH communities. I wish first to acknowledge my distance from India, both geographically and from the lived reality on the ground. Short visits, virtual calls, and transcontinental digital collaborations do not quite make up for the sensory and multilayered experiences evoked by *home*. As a postcolonial scholar and person, I understand this distance partially as a loss, removed as I am from the heart and context of my work. I also intend, however, to use my position and draw linkages between transnational colonial histories of infrastructural violence, and advocate, above all, for alliances between marginalized and formerly colonized people doing digital humanities work in the Global South and the Global North. I begin by tracing these colonial roots of infrastructural projects, then examining the case study of Facebook's technological intervention in India, and concluding with recommendations for digital infrastructural projects in the Global South.

My writing on this project was punctuated by the shrill whistle of trains passing by Lawrence each night, and this sound was a daily reminder of the violence that

historically undergirded infrastructural projects. The story of the railways in the American Midwest is one of settler colonial violence and native dispossession. The Kansas Pacific Railroad, which passed through Lawrence, like the better-known Transcontinental Railroad connecting the two American coasts, was connected to a broader settler colonial imperative of opening up the American heartland for white settlers, and the economic, military, and communication needs of the Union. Construction on the Kansas Pacific started in 1855, amidst tensions in the then Kansas Territory about what stance it would adopt on slavery and whether its allegiance lay with Abraham Lincoln and the Union, or with the pro-slavery Confederate South. These infrastructural projects were premised upon the dispossession of native tribes, whose lands were seized by the government, acquired through violence or war, or obtained fraudulently by private companies, so that the railway lines could be built and white settlers could establish towns along the lines.

The Kansas Pacific passed through Lawrence, and surrounding areas, after acquiring lands in the Delaware Reservation and the Pottawatomie Reservation at severely undervalued prices, and some of the tribes never received even that monetary compensation. David G. Taylor explains that acquiring the Indian lands was not solely about "right of way" so the Kansas Pacific could be built. Rather, promoters for the line saw the Indian lands as a means of financing railroad construction; they intended to sell parts of the land they had acquired and use unsold parts "as collateral for loans" (Taylor). Such underhanded, fraudulent schemes by private companies were backed by the Union in the form of treaties, federal funding, and military support.[1] Indian tribes opposed to the theft of their lands for railroad projects were met by the Union military which camped along the expanding railway lines. The railroad infrastructure in the American Midwest thus not only emerged from the violence of settler colonialism, but also served to perpetuate it and it received the full backing of the nation-state.

The railway depot in Lawrence has found itself on the periphery of the town today, but the whistle of the trains passing through should serve as a clarion call to remember this troubling history of railway infrastructure. This instance in American history is also repeated in other colonial contexts where transportation and communication infrastructures were built. The British undertook railway construction in Kenya to counteract Germany's colonial ambitions in Africa, and relied on Indian indentured labourers to perform the gruelling work with high mortality rates. The Panama Canal, intended to connect the Pacific and Atlantic for a faster trade route, was similarly constructed with high mortality rates among the Caribbean labour which built the canal under French, and later American supervision. In India, too, the recent history of transportation and communication infrastructures is steeped in colonial objectives. Bogart and Chaudhary explain that the "initial advocates for developing railways in India were the mercantile interests in London and Manchester" because the railway system would allow for the export of Indian raw materials like cotton, and the import of finished projects from Britain (Bogart and Chaudhary 2). Railway infrastructure developed rapidly after the Indian War of Independence in 1857, but British authorities had long recognized the strategic

military and political importance of the railways to the colonial administration.[2] Aside from the railways, the telegraph system built by the British in India also served a similar political and military purpose.

Although both these technologies and their infrastructures would later be subverted by the Indian struggle for independence, their original purpose as a means of control should not be forgotten. These technologies were not intended to benefit the natives, despite their use today by colonial apologists to show that British colonialism aided the sub-continent. Moreover, the inequalities in these original systems are transferred into contemporary communication networks; the contemporary submarine cables,[3] which bring the Internet to the world, are overlaid over extant networks like that of the telegraph cables. Just as the West was better connected through telegraph lines yesterday, countries in the Global North have more robust submarine cable networks than the Global South today. This network is so precarious in the Global South that damage to just two cable systems in 2008 led to disruptions in Internet access to 70 per cent of Egypt, 60 per cent of India, and in at least ten other countries (BBC News). In 2012, a ship anchor severed cables between East Africa and the Middle East and caused disruptions in nine countries (Curt Hopkins).

To understand these imbalances in the submarine cable network, and the resultant *precarity* of the Internet infrastructure in the Global South, we must first address the fact that these submarine cables follow pre-existing sites of power. As Manuel Castells writes, the digital network doesn't spread through the world arbitrarily. Rather, this network "diffuses selectively throughout the planet, working on the pre-existing sites, cultures, organizations, and institutions that still make up most of the material environments of people's lives" (25). As a result of this material undergirding, some actors wield more power in the global network. Castells frames this in the context of value. He argues that dominant institutions, by virtue of possessing power, continue to produce, define, and regulate value, and this leads to politics of inclusion and exclusion. In this regard, the "network society does not innovate" over older or existing social networks.

By invoking this historical and transnational scope of infrastructural projects, I align my work with what Lisa Lowe has called "the intimacies of the four continents" (Lowe 1). Lowe's seminal work argues for situating transnational forms of biopolitical settler violence in proximity, and pushing back against "a global geography that . . . conceives in terms of vast spatial distances" (18). On the one hand, colonial practices in disparate places in the four continents are interlinked, residual, and persistent, and they cannot be studied in isolation from each other. On the other hand, attention to intimacies between the continents also enables us to better discover "less visible forms of alliance, affinity, and society among variously colonized peoples beyond the metropolitan national center" (19). It was in the interest of colonial power to separate colonized people to hinder them from connecting their shared conditions of oppression and forming alliances based on that connection.

Lowe's work is particularly relevant in the context of digital infrastructures given the global colonial history of infrastructural projects in formerly colonized

nations, and the troubling encounter that the colonized had with Western modernity. As Mignolo has stated before, any conversation about "global modernities" necessarily implies "global colonialities" (3). Digital infrastructures remain steeped in the rhetoric of progress and development that conditions Western modernity. I argue that attempts to build digital infrastructures in India (and the Global South) remain rooted in technoutopian and colonial ideologies, thus advancing the notion that technological progress with Western aid will address the social, political, and economic problems vexing the Global South. While my focus in the rest of this chapter will be on India, the context for my critique remains transnational in the hope that we can identify emergent technological alliances and resistances among peoples in the Global South and historically marginalized and dispossessed groups in the Global North.

Digital infrastructure as a technological problem

In the last several years, government agencies, international organizations, corporations, and scholars alike have been invested in conversations about a global digital divide. The digital divide generally references disparities in Internet access within countries and internationally. The most direct evaluation metric for the digital divide is connectivity, but other factors, such as speed and the device used to access the Internet, are also taken into account.[4] The policy level solutions to the digital divide are often framed in technological terms. One report by UNESCO, for example, outlined five recommendations, mostly to do with Internet infrastructure, and government policy changes related to Information and Communications Technology (ICT). One section recommends that "bridging the digital divide needs a combination of complementary technologies" and advises using "satellite networks, fibre-optic cable and terrestrial wireless systems" together (The State of Broadband 62). The UNESCO report exemplifies a broader trend in public discourse on the digital divide. Cultural specificities are briefly mentioned (in this report, pertaining to a gendered digital divide), and colonial histories are seldom evoked in such reports. As I show shortly, race, class, gender, and other facets of social identity are known to affect Internet access, but these facets are treated as secondary issues (after the technological) and addressing social inequities falls outside the purview of infrastructure building. Rather, improved digital infrastructures are hoped to address these social inequities so that they don't need to be discussed at all.

This framing of the digital divide as a technological problem, rather than a historical, political, or social problem is important because it sets the terms of inter/national discourse, and limits the kind of solutions proposed to address it. In my work, I use the term "infrastructure" to denote both "technical systems and the social networks" that form around them (Anand in Larkin 331). As sociotechnical assemblages, infrastructures encompass material presence, bureaucratic logics, and ideological orientations. More recently, Alan Liu has argued that digital humanities[5] must focus critique on infrastructure because infrastructure is, today, "the mise-en-scene of culture" – infrastructure not only enables an experience of

culture, but it is part of our cultural experience today (Drafts for *Against the Cultural Singularity*). Interestingly, the Telecomm Regulatory Authority of India (TRAI), which played an important role in the Facebook debacle that I describe later, does define infrastructures as socio-technical, although it remains unclear how this conceptual framing translates into policies and practices.[6] While discussing the Digital India initiative, TRAI appears to delineate "digital infrastructures" as a separate interest area from "digital empowerment," with the former encapsulating technical advances and the latter focusing on the human element (TRAI).

To illustrate the problems inherent in this technological perspective of digital infrastructures and the digital divide, I turn to Facebook's unsuccessful attempt at offering the Free Basics initiative in India and examine the colonial paradigms about modernization, progress, and equality evoked by this initiative. While Facebook is one of many foreign tech companies operating in India, it is also one of the most popularly visited websites in the country (Alexa).[7] WhatsApp, the mobile messaging service owned by Facebook, also finds its biggest market in India – the country has the highest number of WhatsApp active users. Not only does Facebook have a vested interest in maintaining its market share in India, but also scholars need to examine the impact of Facebook's operations in India, given their potential vast impact. Facebook's international scope also makes it an appropriate site for studying digital infrastructures in the Global South. Citing the "evident dominance" of just two companies, Google and Facebook, as the most visited sites globally, Graham and De Sabbata refer to the digital scene today as the "Age of Internet Empires" (Internet Geographies). This overrepresentation is significant as "the territories carved out now will have important implications for which companies end up controlling how we communicate and access information for many years to come" (Internet Geographies). Thus, we need to keep extending the kind of postcolonial and decolonial critique that Roopika Risam and Adeline Koh called for when they noted that digital humanities must be attentive to decolonizing digital spaces and "disrupting salutary narratives of globalization and technological progress" (#dhpoco).[8]

The Free Basics initiative launched by Facebook purports to bring Internet access to underserved communities in the Global South. The scheme is grounded in the understanding that mobile phones, rather than computers or tablets, are access points to the Internet for many countries in the Global South. As such, Facebook partners with local telecommunication companies to offer selected online content for free to customers. This online content varies from country to country, but it is supposed to be localized and include a mix of websites delivering essential content, including news, health, jobs, government services, and so on. Customers don't need wifi to access these services, and the sites have a low bandwidth load. Service providers who wish to make their online services available on Free Basics have to go through a vetting process controlled by Facebook. Not surprisingly, Facebook is one of the free services offered as an essential on this platform. Internationally, the scheme is now available in sixty-three countries, mostly in the Global South, and claims to have twenty-five million users worldwide.[9]

In India, for a two-year period from 2014 to 2016, Facebook aggressively conducted a campaign on behalf of Free Basics. Partnering with the Indian telecommunication company, Reliance, Facebook recruited a number of Indian companies to offer their content through the Free Basics platform and sought buy-in from the Indian public to use Free Basics. This campaign might largely masquerade under the rhetoric of advertising and marketing, but it should be seen as a biopolitical maneuver to shape the technosocial infrastructure and imaginary of the Indian sub-continent. The campaign was replete with colonial tropes, bringing together troubling narratives about technological primitivism and the white man's burden. The India framed in the campaign was a simultaneous space of spiritual enlightenment, a new frontier for the digital empire of Facebook, and the testing site for techno-capitalist schemes that could be taken elsewhere if they were successful. India was the sixth country where the initiative had officially launched, and it was the first one in Asia, and conquering the digital frontier of India would have eased the adoption of Free Basics globally.

The advertising campaign received much publicity when Mark Zuckerberg met Indian Prime Minister Narendra Modi as part of latter's tour of Silicon Valley in 2015. Courting the Indian Prime Minister in Silicon Valley became one of the high profile moves that Facebook would make on behalf of Free Basics, and one of the reasons why their campaign was interpreted in colonialist terms. As Deepika Bahri explained, by "partner[ing] with local elites and vested interests," Facebook operated on a colonial model of intervention in the Global South (Bahri in Lafrance).[10] At a town hall event hosted by Facebook for Modi, Zuckerberg announced that his investment in India was personal because India had a part in inspiring him in the early days of Facebook. In 2008, while under pressure to sell the company, Zuckerberg had been advised by Steve Jobs, the Apple CEO, to visit a temple in India "to reconnect to what I believed was the mission of the company" (Annie Gowan – Independent). Zuckerberg did spend a month in India in 2008 and later declared that the trip allowed him to find some spiritual rejuvenation as it "reinforced for me the importance of what we were doing" (Annie Gowan – Independent).

Indian spiritualism has long been co-opted into the American counterculture movement of the sixties and seventies, with gurus, meditation, and yoga offering a path to a transcendent state of mind. And for Silicon Valley technocrats steeped in the counterculture, India is configured as a space where white Westerners visit for spiritual enlightenment, and to escape from the hypermodern, urban landscape of Silicon Valley.[11] This leitmotif of India as a mystical and spiritual place evoked by Steve Jobs and Mark Zuckerberg is part of the older Orientalist discourse of colonialism. If the Orient was framed as a mystical or mysterious site, it absolved colonizers from parsing through cultural specificities and placed these cultures in an otherworldly realm beyond the rational logic of Enlightenment thinking.[12] The Orient, Said observes, "was overvalued for its pantheism, its spirituality" and "such overesteem was [inevitably] followed by a counterresponse," in which the Orient was also framed as backward, barbaric, and so on (Said 150).

Facebook's Free Basics was launched in India against this backdrop of Orientalist discourse, and Zuckerberg's early words already anticipate the emergence of an "Other" subject to which Western aid will be extended. The richness of India's spiritual traditions form the contrast to the abjectness of its technological scene. Indeed, declaring Internet access as a fundamental human right, and framing Facebook as a humanitarian agent, Zuckerberg announced at this town hall that Facebook was working to bring Internet access to four billion people in the world. I use the verb "bring" with the many implications of that term in this context: there is a sense of a unilateral decision made by Facebook on behalf of the people of the Global South; there is an element of "bringing around" or "bringing about," of persuading people about Facebook's mission; and there is an implicit notion that Indians must be brought to the digital panacea promised by Facebook because they are in a space of technological deprivation. This is why Mignolo argued that the "rhetoric of modernity is a rhetoric of salvation (by conversion yesterday, by development today" (xxiv).

To bring the Indian public about, Facebook launched a massive marketing campaign premised on technoutopian fantasies; by this, I mean the notion that technological advancement is a necessity for improving human lives and human rights. The advertisements, publicity material, and op-ed pieces published by Facebook in late 2015 paralleled colonial ideologies touting Western modernity. A two-page advertisement appeared in *The Times of India*, one of the major national newspapers in India, in December 2015.

The advertisement makes several extravagant promises about what Free Basics offers to the Indian poor, ranging from the idealistic (digital equality, connectedness) to the concrete (jobs). The ad also communicates the notion that Free Basics is absolutely essential for the future of the nation. Rhetorical appeals about national development are repeated in a number of phrases: "opportunities online," "better future," "digital equality," and progress, and most strongly, "move India forward" (*TOI* ad). What these terms mean or any specific details about this future are not offered, leaving the reader to imbue these terms with a meaning suitable to the reader's own interests, desires, and (possibly) marginality. Above all, this advertisement makes an argument based on absence: what the reader is supposed to fill in is the negative of these utterances: that a nation lacking in digital infrastructure supported by foreign investment cannot progress, that it lacks a good future, and that it fails to provide opportunities for its citizens. (I am less interested here in the truth value of these statements then their presentation as rhetoric.)

This language of progress and modernization used in the advertisement is far from innocuous because to say that Free Basics will move "India forward" is also to say that India is currently backward. This notion is reinforced by the visuals of the advertisement, which are rich in traditional and cultural symbols (the henna, bangles, and traditional outfits) and frame both the young women as traditional subjects who have embraced Western modernity. Such imagery, particularly of young girls and women, recurs in other Facebook ads on Free Basics and represents the only (and very limited) attempt made by the company to discuss the gendered

dimension of the digital divide. Painted within this picture of dearth, Facebook is presented as an altruistic entity rather than a multinational corporation that stands to gain much by staking a claim on the Indian market. The ad also attempts to convince readers that Free Basics is the first step towards digital equality – a disingenuous move which suggests that there have been no prior attempts at digital equality in India and that Facebook's initiative is an appropriate first response, in a series of responses to digital inequality in India.

These technoutopian promises about the affordances of technology, particularly the claims about equality, opportunities, and rights, predate the digital era and are at least as old as the British colonization of India. From a postcolonial perspective, Facebook's intervention in India is reflective of a colonial pattern, of Western attempts to bring technologies into India to supposedly help the sub-continent "develop." Inevitably, this development happens on the terms of a Western agent, and involves a profit-making scheme for this agent. (The railway and the telegraph system I discussed earlier are both classic examples of this scheme.) This rhetoric of development is premised on the understanding that colonized people were pre-modern, primitive, lacking in technology and technological know-how, and it was the responsibility of the colonial empires to advance their barbarian subjects. Rudyard Kipling, the English writer who lived extensively in India, called this the "white man's burden."[13] Facebook's Free Basics falls into this same paradigm of thinking when it posits that access to technology will solve the political, cultural, and economic problems that vex the Global South.

This technoutopianism rests at the very core of Western modernity, and its recurrence as a colonial and neocolonial motif is unsurprising. Brian Larkin notes that it is "difficult to disentangle infrastructures from [such] evolutionary ways of thinking" because infrastructural development has its roots in Enlightenment thought and an idea of a world grounded in circulation and progress (322). Of course, these ideas about circulation and progress are problematized when transposed against colonization and the transatlantic slave trade. The connectedness and ease of circulation brought about by infrastructural development, and the purpose of infrastructural development, also enabled the transatlantic slave trade. The logic of circulation might enable the circulation of ideas (or data, more contemporaneously), but it also references the extraction of resources from colonized places and the introduction of finished products imported from England to the colonies. As a project of Western modernity, infrastructure building is tied to technoutopian fantasies and colonial ideologies, and it must be detangled from these conceptions.

Facebook's Free Basics campaign was eventually unsuccessful. While the colonialist undertones of the campaign certainly played a role, the campaign met its demise in a policy violation. The initiative had been persistently called out for violating net neutrality; given the limited access to the Internet it allowed users. Moreover, Facebook retained substantial control over which services would be offered at all, as content service providers had to follow developer rules outlined by Facebook. In February 2016, TRAI (The Telecomm Regulatory Authority of India) finally banned the service in India on the grounds that it violated principles

of net neutrality. The ban came on the heels of a massive uproar, particularly in Indian cities, about Facebook's perceived highhandedness in running the campaign. Many Indian Facebook users felt imposed upon when Facebook added a link to their Facebook profiles and encouraged them to send an automated email to TRAI on behalf of Free Basics. By pushing users so blatantly to make a decision that supported itself, Facebook inadvertently uncovered the ideological underpinnings of its own platform.

Moreover, Facebook's decision to attack Indian net neutrality activists who had been protesting Free Basics was not well received. In one op-ed piece penned by Mark Zuckerberg in *The Times of India*, he decried net neutrality activists who he accused of peddling "fiction" and false claims about Free Basics (Zuckerberg).[14] The op-ed again conjures an image of technological backwardness, offering up the example of a "farmer in Maharashtra called Ganesh" who used Free Basics to "prepare for [the] monsoon season" and eventually started "investing in new crops and livestock" (Zuckerberg). Zuckerberg then asks, "How does Ganesh being able to better tend his crops hurt the Internet?" The success story allows Zuckerberg to misdirect attention away from Facebook's ethics, because the ensuing pathos laden rhetorical question only has one moral answer in the limited terms of discourse set by Zuckerberg. That there might be other models for providing Internet access and building digital infrastructures in India, and in the Global South, goes unacknowledged. At least, unacknowledged by Facebook, but not so by Indian net neutrality activists who adeptly challenged these assertions. As Nikhil Pahwa asked in a competing op-ed, "why hasn't Facebook chosen options that do not violate Net Neutrality?" (Pahwa). Pahwa's question reframes the conversation by bringing up the possibility of an "open, plural, and diverse web" and refocuses the attention on Facebook and its responsibilities in India. Facebook's attacks on Indian net neutrality activists roused anger particularly because Facebook had spoken strongly in favor of net neutrality in the United States. There was a perception of a double standard: that Facebook was attempting to exploit lax digital laws in the Global South in a way that it was prevented from doing in the West.

The TRAI ban was not entirely surprising, given this furor, and it sent out a strong message that we not accept the self-serving benevolence of neocolonial tech corporations. While there is certainly a need to develop digital infrastructures in the Global South, this development cannot be entrenched in colonial ideologies which are ultimately harmful to peoples affected by colonial projects. Yet, the outcomes of this particular episode were not entirely satisfactory: although this was a setback to Facebook (which has never since revived Free Basics in India), the initiative did expand to many neighbouring countries and other parts of the world. Facebook, moreover, is not alone in its ambitious desire to shape infrastructural development around the world. Google, the other Internet empire, has its own such projects, and one of them, Project Loon, was recently approved for testing in India. Such technocratic successes and experiments point to the need for constant vigilance, and for the need too, of imaginative decolonial projects that can envision critical and liberatory forms of digital infrastructures. The Global South cannot be

a haphazard laboratory for IT companies in the West to test out temporary schemes for providing Internet access. Such temporary, stop-gap, or limited schemes cannot ultimately benefit the people they purport to serve.

In closing, I would like to offer three recommendations for (digital) infrastructural projects in the Global South:

First, we must move away from the idea of digital infrastructures as apolitical systems, and as systems which offer inherent benefits like equality and progress. As my early example of the railways in Kansas and in India indicates, infrastructures can perpetuate colonial violence against marginalized people, and actively work against the political, economic, and social interests of marginalized people. Given this colonial history, we must ask who defines the terms on which the so-called Third World is being developed, and what ideologies are inherent to the infrastructures and technologies developed by IT companies in the First World. I am not recommending here that the Global South turn away entirely from foreign investment in digital infrastructure. Rather, we must continue to hold technology companies (both native and foreign) accountable, particularly for technological solutions to social inequalities. As Philip and colleagues remind us about postcolonial computing, we cannot "escape from the political nature of technocultural practice. . . [and hence, find] located, always ambivalent engagements" instead (15). Instead of reifying native technologies and infrastructures, we can consider approaches that generate "reflective and provocative engagements and more questions" (15).

Second, we need to articulate richer definitions of Internet access to ground our conversations on the digital divide and digital infrastructures. In particular, defining Internet access as a yes/no binary limits the technosocial imaginary and fosters technoutopian fantasies about digital technologies solving the problems that vex the Global South (*if only* people could access the Internet). Instead, Adam Banks advises that we move towards different kinds of "access', including experiential, critical and transformative access. Framing technology as a site of struggle for marginalized people, Banks asks how digital technologies can be constructed with marginalized people as collaborators, consultants, and partners rather than simply as end-users (42). Technologies and infrastructures must be relevant to people on the ground, and attentive to local conditions. While Banks's work is developed in the context of Black technology practices in the US, this context again illustrates the possibility of transnational alliances on digital technologies and infrastructures among marginalized people in the Global North and Global South.

Third, despite my critical take on Facebook's interventions in India, I don't recommend a techno-pessimistic outlook towards infrastructural development. As Ruja Benjamin puts it, "we need to recruit androids into our struggle" so that we are not situating technology in opposition to human and postcolonial life (Benjamin keynote address). Digital solutions will not resolve social inequalities, but they can be powerfully leveraged by marginalized people in their own lives, and in movements for social and racial justice. In terms of infrastructural development, we can take up Alan Liu's call to "pragmatically [guide], the agencies and factors in [infrastructural] making and remaking" (Alan Liu, Drafts for Against the Cultural

Singularity 2016). Framing digital infrastructures as a sociotechnical endeavour creates space for humanists to intervene in and shape conversations and projects pertaining to infrastructure development. While this particular chapter has been primarily invested in postcolonial critique, we must also imagine and articulate new conceptions of postcolonial design, code, technologies, and infrastructures.

Notes

1 Richard White observes that Congress was so sold on the transcontinental railroad projects that it authorized a "profusion of stocks, bonds, and other favors, that between 1862 and 1872 railroads received grants the size of small and medium states" (White).
2 In a minute on the railway issued by Lord Dalhousie in 1853, he writes that a "single glance cast upon the map recalling to mind the vast extent of the Empire we hold . . . will suffice to show how immeasurable are the political advantages to be derived from a system of internal communication" (Railways India). Dalhousie's minute goes on to spell out the military advantages (especially speedy movement of troops within the sub-continent and the dissemination of intelligence reports), political, and economic advantages.
3 Submarine cables are undersea fibre-optic cables used for telecommunication purposes. The use of satellites in the global Internet network remains minimal, and the submarine cables essentially reflect the predominant material infrastructure of the Internet today.
4 See Ragnedda and Muschert's discussion of the digital divide. They explain that the concept is "typically measured via access to the Internet (versus non-access), number of sites at which the Internet is accessed, users' skill at using the Internet, amount of time spent online, and the variety of activities carried out digitally" (2). Their work calls for attending to the " nuances to the digital divide, [the] ones which add finer gradients to the discussion" beyond binary classifications of access/no access (2).
5 Patrik Svensson has also written extensively on digital infrastructures in the context of the digital humanities. In one of his articles, he traces a three-layered model for developing humanities infrastructures which incorporates conceptual infrastructures (the epistemic undergirding), design principles, and actual (material) infrastructures (Svensson).
6 In a presentation at the Symposium on "Collaborative Regulation for Digital Societies," TRAI offered the following definition of digital infrastructure: A " collection of technological and human components, networks, systems and processes that contribute to the functioning of an information system" (TRAI, drawing on Braa et al., Tilson et al.). http://trai.gov.in/sites/default/files/presentations_&_cv/Day-3_25Aug2017/Session2_Digital%20world/Digital%20Infra_Rajesh%20Sharma.pdf.
7 Alexa has consistently ranked it in the top five of most visited sites in India.
8 Risam and Koh are writing, as I am too, in an older research arc that spans science and technology studies. Kavita Philip and colleagues, for example, defined a field of inquiry called "Postcolonial Computing," which "proposes a rubric under which to examine this new global configuration of technology, cultural practices, economic relations, and narratives of development" (21).
9 Facebook was reported to be talks to bring Free Basics to underserved communities in the US in 2016, but nothing concrete has materialized out of these talks.
10 Bahri offers the following criteria that define Free Basics as a colonialist project: "1. Ride in like the savior, 2. Bandy about words like equality, democracy, basic rights, 3. Mask the long-term profit motive, 4. Justify the logic of partial dissemination as better than nothing, 5. Partner with local elites and vested interests, 6. Accuse the critics of ingratitude" (Lafrance).
11 Another Silicon Valley figure who visited the temple explained its draw by saying that "everybody in the world wants to go and see this place. . . . It's a combination of 'Eat Pray Love,' know thyself and change the world" (Gowan).

12 At the same time, however, there was great interest among the colonial scholars of the Orient in the rationalist project of "dispelling mystery and institutionalizing even the most recondite knowledge" in order to open up the Orient for "European scrutiny" (Said 83).
13 In an imperialist poem of the same name, which responds to the American colonization of the Philippines.
14 One sample statement from the op-ed is as follows: "Instead of wanting to give people access to some basic Internet services for free, critics of the program continue to spread false claims – even if it means leaving a billion people behind" (Zuckerberg).

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