



# The Technological Self in India: From Tech-savvy Farmers to a Selfie-tweeting Prime Minister

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## ABSTRACT

In this paper, I propose that ICTD in India has been defined and promoted by an aspirational discourse of modernity that is not necessarily tied to the outcomes of actual projects in this space, but rather exists independently and has wide-ranging implications, including in mainstream politics. I highlight cases from specific ICTD projects, or the way they have been portrayed in the public sphere, to establish ways in which the symbolic value of technology has been an important driver of their purchase in public consciousness. Using these to foreground the discourse of technology in India, I examine the brand imaging of Narendra Modi, the current prime minister of India, and propose that he both understood and ably used the aspirational sentiment toward technology to craft an image of technocrat modernizer, obscuring a longer-standing image as a sectarian politician. I propose that Modi's is a beneficiary of an ICTD wave of thinking in India, and at the same time, his own careful curation of an online persona brings finesse to the notion of a technological self in politics. In this, the citizen-state relationship is mediated by the imagination of an enlightened, tech-savvy politician leading people who are themselves legitimated as citizens by their relationship to the technologies they use.

## CCS CONCEPTS

• Social and Professional Topics → Professional Topics • Computing and business → Socio-technical systems

## KEYWORDS

Social Media, Narendra Modi, Twitter, Technological self

## 1. INTRODUCTION

In 2010, a new anthem for the Tamil people was presented at the annual Tamil World Conference in Chennai, in the southern Indian state of Tamil Nadu. The anthem, “Semmozhiyaan Thamizh

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<sup>1</sup> <https://www.youtube.com/watch?v=IRITPjraXgA>

Mozhiyaam,” meaning “Tamil is a Classical Language,” was a paean to Tamil language and culture, written by then Tamil Chief Minister M. Karunanidhi. It was set to music by an internationally renowned musician, A. R. Rahman. The music video of the song featured happy citizens, lush landscapes, schoolchildren, and celebrity appearances. It also had two direct references to information technology use.

First, a traditionally dressed young woman haltingly enters a shiny high-rise building. She looks at the building in wonder, with the air of being out of place. The scene cuts to a room with cubicles, and after greeting a man who has offered her a job, the woman proudly sits at her new desk, opens up a browser, and does a search on Google, typing in the Tamil script. The camera pans back to her happy face (Fig. 1).

A subsequent scene shows a text message exchange between a father and a son. The father is seated in a garden outside a home in India, and the son is in what is ostensibly a Western setting, speaking from a luxury apartment overlooking a high-rise cityscape.

The young woman embodies the modern citizen in her balance of traditional dress with her mastery of technology. The symbolism of technology is glaring in its banality — in its blending into the scene like the lush landscapes and happy children. Technology is presented as part of the natural order of what it means to be Tamil.



Figure 1: Young female technology worker in the Tamil anthem “Semmozhiyaan” (Credit: Escape Artists Motion Pictures)<sup>1</sup>

“Semmozhiyaan” showcases the material culture of digital technology — computers, office cubicles, and the glass and steel skyscrapers of technology — in a way similar to how Latour and Woolgar, in their seminal study of the Salk Institute, showed how objects like laboratories, instruments, and lab coats were part of the process that contributed to the creation and understanding of scientific knowledge [1].

These shiny technology towers stand in contrast to the Soviet-era block architecture typical of the urban Tamil Nadu landscape. The photo-identification-holding lanyard worn by technology workers in India replaces the lab coats of the Salk study, serving as material authenticators for their access to regulated spaces hidden behind keycard security.

This media-driven hyper-reality took hold in India in the 1990s. Digital technology was widely portrayed as transforming India, enabling jobs, services, conveniences, and class-transcending. Blockbuster films featured heroic software engineers, computer classes in villages, and television advertisements about the benefits of e-governance [2] (Fig. 2). The Indian computer engineer was an object of aspiration, a far cry from the scruffy Western programmer [3]. Karunanidhi himself was one of several chief ministers and politicians who incorporated the technological artifact into their political brands by giving away laptops at events that were staged and televised, announcing to the public their embrace of modernity.

Much has been written about the aspirational culture surrounding technology and middle-class modernity in post-liberalization India [4, 5], but very little has been penned about the symbolic value of the digital artifacts and the processes they engender. Symbolic value has been defined as the “*capacity of a perceived object to evoke reactions relevant not primarily to itself, but to some state of affairs which it represents*” [6]. It thus comprises abstract notions about what it means to be able to own and use technology artifacts, and what these artifacts do for individuals and collectives. It exists within a broader public discourse that constructs unconscious and conscious mind, and emotional life [7]. This discourse is in turn created by conversations about digital technology in various parts of the public sphere including the mainstream media, government and academy, down to individual conversations over the meaning and consequence of technology in daily life.

The symbolic value of technology is notable for its constructed utility in enabling the idea of “leapfrogging” — a radical shift to escape economic underdevelopment, social exclusion, or structural inaccessibility. The notion of leapfrogging has been central to both the demand and supply of information and communications and development (ICTD) work in India, particularly where existing development interventions (e.g., education, poverty alleviation programs) are seen as failing to help the people who need it. It allows for a veritable leap, mainly in imagination and hope, out of this context [8].

Such expectations from digital technology are traceable to a longer history of science and modernity. Their contemporary form ties them to socioeconomic and geopolitical changes since the 1990s, but they trace back to the popular discourse of technoscience in India in which the symbolic value of the technological artifact has been framed since the postcolonial (and arguably colonial) period as the justifier for leadership and control in society. As with the colonists’ case for enlightened management founded on their superior technology, thus was framed the scientists’ and dam builders’ place of pride in early independent India. The millennial personification of this in India has been the software engineer.

In this paper, I argue that the symbolic value of technology has defined the demand for ICTD-related projects in India for much of the last two decades. Over these years, modernity has been defined by both the projects or technologies themselves, and the individuals responsible for bringing them — whether they are visionaries associated with technology, such as business leaders or scientists, or the common citizens who have desirable occupations, such as technology industry workers. I argue that the public discourse around technology in India has been seductive beyond just its role in propping specific ICTD projects. It has provided the defining vision of development and enlightened citizenship. I propose that Narendra Modi’s rebranding and use of technology in a general election marks an important moment in this technological imaginary, in that it has been accepted as an accessible, populist, and incontestable vision for the future of the nation.



**Figure 2: Actress Nayanthara from *Yaradi Nee Mohini* (2008), playing a technology project manager. In the film, she inspires an unemployed man to reform by becoming a software engineer. Her Indian dress emphasizes Indian feminine values, while the ID and lanyard signify her access to the economic and intellectual productivity of the tech industry (Credit: RK Productions)**

The notion of a technological imaginary was proposed as a mediated “*imaginary institution of technology*” [9], particularly in cinema studies, in which technology was used to refer both to the hardware of production and the representation of cultural aspirations embodied in the technological artifacts [10]. I extend the understanding of the imaginary in the ICTD context, first narrowing technology as referring to digital technology and its material and virtual artifacts, as well as its imaginary as embedded in the ways that digital technologies get talked about. Using examples from past projects in the ICTD universe, we observe a technology-oriented hyper-reality as it originated among elites and subsequently moved to other socio-economic groups and pervaded state and non-state spaces. Following this, I present the case of Narendra Modi’s social media feed, and propose that his political positioning with technology has a recursive and circular relationship with ICTD, each constantly driving the other as part of a broader technological means of being.

I use the notion of a technological self as constitutive of a way citizenship is defined by one’s relationships, literally, to the digital technologies that govern society around oneself. In this, I use both

Leo Marx's notion of the self turned from a natural to technological self, driven by the mechanization of society, and Michel Foucault's notion of the "technologies of the self" as the ways in which individuals govern or regulate themselves within systems of power. The self here refers to the politician and his regulating of his own image as a technological being, and citizens, governed and defined by their relationship to the technological artifacts around them. I use the artifacts as having symbolic meaning, particularly of an aspirational nature, in and of themselves. Modi is not the first politician to present himself as a modernizer — not even in India. He is, however, the first major national leader to incorporate technological artifacts into his daily being. Modi did not just promote himself as a supporter of scientists or technologically led development. Devices, technology-mediated communication, and a constant flow of imagery of the leader alongside technology replaced the old sectarian populist in Modi, one who was a lot less defensible in the contemporary political environment of India.

## 2. THE ICTD TRADITION IN INDIA

Technology-driven development in India originally focused on the peasant farmer, an enduring image of underdevelopment. The farmer's financier, the rural money-lender, was the ubiquitous antagonist. The peasant farmer was held back by the rural money lender due to lack of ability in price-discovery — a microeconomic presumption. ICTD initiatives in the mid-1990s offered computer training to farmers to improve farming practice and trade through better access to information. These initiatives assumed that lack of information was the main impediment to so-called development but that digital technology, especially the Internet, could solve price-discovery problems. These would provide the first round of ICTD failure cases in India [11].

Farming provided an early ICTD focus, but other domains followed quickly. Education provided a logical domain area — in a failing system stacked against poor, rural schools, computers were posed as providing the potential for fixing problems, bypassing the structural issues of primary education. Constructivist learning approaches (e.g., "learning by doing") used computers to leapfrog bad teachers and schools, and arm children with neutral objects (computers) to learn [12]. The Massachusetts Institute of Technology (MIT)'s \$100 computer and the One Laptop Per Child (OLPC) initiative sought "to empower the children of developing countries to learn by providing one connected laptop to every school-age child."<sup>2</sup> This globally recognized effort was accompanied by local efforts in India and elsewhere. Throughout the Global South, computers went into poor, underperforming schools [13].

In addition to education, health care and governance were a focus for ICTD. This included health data [14], telemedicine and persuasive health management [15]. Persuasive health management was the delivery of messages on mobile phones for clinical adherence, signaling that unreliable human behavior (e.g., forgetting to take one's medicines) would be offset by the neutral, dependable digital technology [16]. There was also a neoliberal discourse of reducing inefficient government through ICTD. E-governance was proposed for digital records, single-shop official applications, and tracked electronic state communications [17]. E-governance was a forward-looking idea championed by transformational figures (politicians) who displaced corruption-

prone analog systems and enabled direct citizen interface with governance [18].

Valuable external forces were at play in building ICTD in India. The non-resident Indian engineer not only played a symbolic role for the potential of technology, but many such professionals actively contributed to technology-related projects by serving in advisory capacities to state governments or as part of non-profit initiatives. As the brain-circulation paradigm of thinking about expatriates as an economic — and more important, social — resource grew, cities like Bangalore turned into transnational locations of class negotiation [19]. Several leading global tech firms set up shop in India, investing their corporate social responsibility (CSR) monies into technology for poor people, driven by the growing buy-in for the bottom-of-the-pyramid paradigm of development through corporations, and a teach-a-man-to-fish ideal that focused on individualized skill-building. Around the same time, research groups that worked on ICTD issues were set up in India by HP Labs, Microsoft Research, and IBM India. These research labs developed products and services for the Global South but could also be conveniently located for business in India, and conduct research in English. Such work expanded interest in this space and rewarded these corporations with coverage in the mainstream news media for the said efforts in working toward India's development, which served as public relations exercises for these firms.

By the late 2000s, the early euphoria around ICTD turned to introspection in the scholarly community working on India. Researchers looking at India alongside the global ICTD scenario, such as Heeks, claimed that early ICTD marginalized poor people with a supply-driven focus [20]; Toyama proposed that technology only amplifies existing potential [21]; and Srinivasan and Burrell cautioned against technology-driven market price arbitration as an indicator of ICTD success [22]. Benjamin and colleagues critiqued e-governance for new forms of corruption and social exclusion [23]. Often the client populations of ICTD projects reported interest in adopting new technologies, but Dell and colleagues showed that such people would give satisficing feedback to foreign researchers for reasons of agency or a desire not to offend [24]. These critics pointed at lack of attention to contextual, structural factors and institutions, or to techno-determinism and supply-side biases.

However, the buy-in for a technology-driven notion of citizenship and development has been consistent, growing dramatically since Narendra Modi's prime ministership: most significantly with the demonetization project of November 2016, which aimed in one swoop to remove "black money" and move the country to digital banking, and Modi's own push for the Aadhaar biometric identification (ID) scheme.

There is a distinct undertone of technology-driven modernity in Modi's promotion of the two schemes. The Aadhaar biometric ID card scheme aims to register every Indian citizen for services, and the demonetization effort removed from circulation the two most common large-bill cash notes with the goal of reducing corruption and digitally tracking income and transactions. Modi released and promoted a digital money scheme called BHIM (Bharat Interface for Money). Eponymously named for civil rights campaigner Dr. Bhimrao Ambedkar, Modi tied the right to financial transaction and participation as central to citizenship in his promotion of the BHIM app.

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<sup>2</sup> <http://laptop.org/en/vision/mission/>

*Like Dr Bhimrao Ambedkar worked to give rights to the common man through the Indian Constitution, one can expect the BHIM app to do similarly great work through the financial system [25].*

To understand the place of digital technology in the Indian imagination of modernity, we must look back at how the symbolic value of digital technology has manifested itself in ICTD projects over the years.

### 3. THE TECHNOLOGICAL SELF AND THE POLITY

In India, ICTD found an enthusiastic field setting. Science and technology have been at the helm of a state vision of development that dates from first prime minister, Jawaharlal Nehru. The study of science has held a position of pride in the middle-class intellectual elite [26]. This emphasis on science was seen in both the USSR, with which India was seen to align itself through the 1970s and '80s, and in the U.S., with which India aligned itself during the economic liberalization in the 1990s. The early part of the transformation toward a knowledge economy came under the Rajiv Gandhi regime, which started opening up telephony, with Gandhi himself being referred to as the “computer man,” but found its most significant period of growth post 1991. Kavita Philip describes this as the Indian leapfrog experience — one in which the idealized Indian went from the farmer in the immediate postcolonial period to the digital entrepreneur by the turn of the millennium [27]: “Indian geeks now appear as historical singularities, seemingly emerging out of nowhere to catapult the nation to the forefront of emerging economies in the new millennium.”

During this transformation Indian engineers who traveled internationally to work at computing jobs created a new symbol of social aspiration as access to foreign education and high-paying international jobs became increasingly available to graduates in technology subjects. This was a change from when the vast majority of Indians who traveled to the West for high-paying professional occupations were typically the top graduates from a very small group of elite institutions, or wealthy Indians able to afford foreign higher education and then continue to live abroad. After the 1990s, people from the middle classes, including graduates from second-tier universities and small towns, found many more opportunities to live and work abroad as the technology industry boomed [28].

The discourse of techno-optimism was actively supported by politicians, who extended the notion of technocracy into their self-branding, conspicuously brandishing the artifact, whether computer or mobile phone. Andhra Pradesh Chief Minister N. Chandrababu Naidu was known for publicity pictures with him using computers or appearing with people from the tech industry; he started referring to himself as the CEO of the state, the capital of which he referred to as Cyberabad [29]. Politicians rushed to be photographed with tech industry figures like Bill Gates each time they visited India [30]. Computer giveaways became a means of symbolic investment into workforce development. Politicians in various states arranged mass donations of laptops, frequently before elections, sometimes emblazoning their own images onto machines or presetting them as screensavers, replacing entertainment-centric giveaways like televisions and radios with a device of expertise and self-improvement [31].

The growth of telephony also had a dramatic impact. Within a span of less than two decades, access to personal telephones, which was

for generations a symbol of wealth and control over communications, reached the masses [26]. Images of people defined by their subalternity such as farmers, construction laborers, transit workers, and rural women were seen alongside their mobile devices in a range of documents promoting or celebrating development, to underline the new forms of social inclusion afforded by digital technology [32]. The imagery of presumably poor people using mobiles was so appealing that even companies such as Getty Images and shutterstock.com that deal in stock images had sections offering various images of farmers, laborers, taxi-drivers or a range of unspecified South Asian faces using mobiles (Fig. 3). In many such images, the main object of “development” is the suggested incompatibility of the non-Western face with the technological artifact [33]. This way of thinking about access to devices in the hands of the subaltern subject as a gaze at a new India was not just for Western eyes. It served the same purpose for the Indian elite, which celebrated the auto-rickshaw driver or wage worker using the once luxury devices as indicators of a new national modernity.

Individuals could benefit from technology without or even in spite of the state, reinforcing the idea of leapfrogging. Aspirational engineers left the country and did well abroad, but other professionals stayed in the country as part of a fast-growing, glitzy economy in contrast to sloth-like inefficiency, corruption, or underperformance of government [34].



**Figure 3: Image of an Indian farmer using a mobile phone (Credit: Neil Palmer, CIAT)**

Technology represented the first Indian industry that was seen as globally competitive. Ironically, while speaking the neoliberal language and undermining bureaucratic oversight through Special Economic Zones (SEZs), the state also subsidized the technology sector to kick-start it. By the turn of the millennium, the rumors of leapfrog were not overstated — they were painted onto the changing skylines for anyone to see. In time, both the computing artifact and its user were co-constructed in the public sphere as aligned within the terms of India’s post-liberalization move to Western modernity [27].

The state promoted sectoral improvements in service delivery and economic development of the masses. A report from the Planning Commission, India’s highest national planning agency, highlighted this role of information and communications technology (ICT) in 2003:

*ICT platforms that we have studied have been successful in delivering a significant level of benefits to the rural communities. Three traditional technologies have been transformed by the application of ICT. Significant*



*results have come about through the use of ICT in these, namely: Carpet Weaving, leather, Kancheepuram Saree making. Both in the case of soybean marketing and dairy industry ICT platforms have completely transformed the structure of business providing for considerable benefits. The ICT platforms have enormous potential to transform businesses, create new forms of business delivery and create new interaction spaces.*<sup>3</sup>

The change was underway. To closer examine how the discourse of technology manifested itself in the experiences of ICTD projects, I now turn to a few examples from the last two decades that help highlight this.

#### 4. THE VOICE OF ASPIRATION IN ICTD

The Planning Commission of India's 2003 document, during the AB Vajpayee government, titled Vision 2020, outlined a vision for the development of the nation. The report focused on various aspects of modernizing the Indian economy. The section on education was written by Prof. J. S. Rajput, at the time the chair of the NCERT (National Council of Educational Research and Training) one of the top education officials in the country.

*The present rate of economic growth can be substantially increased if India becomes a super power in knowledge sector and if information and technology revolutions are properly understood and exploited. India can substantially eliminate poverty, generate wealth and can play a meaningful role in the international world order....*

He went on to explain:

*A society cannot be considered a knowledge society unless the members of the society have facilities and opportunities for lifelong learning. With the coming up of educational channel, the nation should be in a position to offer educational programmes of various types through satellite and computer networks. This means there would be programmes for adults, parents, etc. these programmes should be telecast round the clock.* [35]

Rajput's vision was predicated on digital technology's ability to circumvent existing shortcomings of the Indian education system resulting from the lack of existing infrastructure for primary schooling, university, and adult learning. In the early 2000s, the state was focused on promoting computer-aided learning (CAL) in the formal education sector, particularly in schools directly managed by the government.

Computer-aided learning was introduced in India in 1984 under the Computer Literacy and Studies in Schools (CLASS) program, which started a process of providing computers to government schools, and a gradual trickle of technology to public secondary education continued through the coming years. The technological discourse at the national level was expanded in 1998 with Atal Bihari Vajpayee's government and its initiation of the National Task force on Information Technology and Software Development, which made specific recommendations on introduction of information technology (IT) in schools including schemes to lower

the cost of computers, ease financing for computers, generate computer donations by corporations and non-resident Indians (NRIs), and unveil the concept of technology-enabled SMART schools [36].

The Vision 2020 document is in many ways central to the political vision of technocracy in India. Drafted by the Technology Information, Forecasting and Assessment Council (TIFAC) of India's Department of Science and Technology, it was nominally helmed by possibly the most iconic figure of technocracy in India, nuclear scientist and former President A. P. J. Abdul Kalam. Vision 2020 proposed an enterprise ethic in schooling and various social sectors, with a role for non-state actors such as NRIs and computer donations by corporations. What emerges in these documents is not only the environment of enthusiasm around technology artifacts, but the specific association of the technological being with non-state actors — a productive private enterprise untarred by the inefficiencies of the state. Since the 2000s, there have also been a number of initiatives to build a low-cost computer or tablet for children in Indian schools. Such initiatives have garnered significant media coverage and political patronage, often buoyed by claims of revolutionizing technology, but have had little or no real-world impact because they have failed to come to fruition [37].

In the period following the Vision 2020 report, a number of private organizations started supporting various forms of CAL in schools throughout various states in India, with corporate social responsibility pitching into an area of massive gap in state funding [38, 39]. Organizations such as Azim Premji Foundation (APF) — a philanthropy set up by the chairman of Wipro Industries, one of India's leading technology firms — got into partnerships with state governments to provide CAL in schools, building their own, often parallel learning curriculum based on games, often untested by professional learning experts. These materials were provided to villages in a corporation-influenced style cost-sharing basis in which village councils, the vast majority of which were among the poorest in their respective states, paid for part of the expenses.<sup>4</sup>

Within a few years, many CAL projects were disbanded. While the state continued to support building computer centers in schools, the idea of computers being the means for teaching schooling subjects found little success with little formal evidence that CAL helped children get a better grasp of their learning material, or that schools themselves were structurally prepared to manage the CAL process [40]. However, these projects had a lasting impact on how people felt computers could impact their lives. Studies found that in the poor remote villages with failing agriculture that had been offered CAL projects, parents were placing their hopes on the newly instituted computers to help their children educate themselves out of poverty and move to urban locations [41].

Bhavnani et al., studying the perceptions of technology among illiterate persons with no prior experience using computers, found very positive perceptions of computers, including that "kids shall become intelligent through its use" [42]. The personification of computers as having abilities in and of themselves was often driven by a flat perception of what it meant "to be able to use a computer."

*I have seen my son working on the computer, making designs. He knows how to use it in less than 1 year. You see all these boys in the 7th standard, after 3 years of learning English if you ask them for a glass of water in*

<sup>3</sup>

[http://planningcommission.gov.in/reports/sereport/ser/stdy\\_ict/15\\_con.pdf](http://planningcommission.gov.in/reports/sereport/ser/stdy_ict/15_con.pdf)

<sup>4</sup> The Computer Aided Learning program provided computers or learning material to over 35,000 schools in 18 states throughout India

*English they will run away. Even the English teacher will not talk to you in English. — Parent [41]*

Children's use of computers provided a deceptive secular vision of flattening knowledge access because it was assumed that all children started with a clean slate with others outside of structural inequities. With a champion like President Kalam, himself a child of rural poverty, this logic was even more powerful. It was however, with adults that the personification of powerful possibilities of computers was most revolutionary. The greatest champion of ICTD around the turn of the millennium was crop scientist M S Swaminathan, who created the Mission 2007 project of bringing a computer center to every village of India. Buoyed by the rhetoric of a second transformation, like the Green Revolution of the 1970s, of which he was credited as an architect, Swaminathan proposed the Mission 2007 project as one that would create an alternative means for galvanizing the village economy and have long-reaching impacts including reducing the possibility of social unrest.

*There is a growing violence in the human heart. While the WSIS was in progress in the midst of a feeling of a brave new world of technological breakthroughs, the main news in the media every day was the loss of innocent lives caused by bomb explosions in different parts of the world. The extensive co-existence of unsustainable lifestyles and unacceptable poverty is not conducive to either harmony with nature or with each other. This is why the success of Mission 2007: Every Village a Knowledge Centre is so important for human security and well-being in our country [43].*

Serving the marginal farmer, the very symbol of the Indian populace, was a central driver of ICTD, with more than 30 projects such as telecenters, knowledge portal services, and mobile-agriculture active at some point since 2000 [44]. Swaminathan's village knowledge centers, like telecenters in much of the world, did not last. In fact, studies have shown that with few exceptions, such as Digital Green [45], the vast majority of agriculture-related ICTD projects failed [46]. However, the discourse of "transformation" ostensibly taken from a Silicon Valley ethic of disruptive technology-driven change allowed or even encouraged failure, and would continue to be extremely powerful in shaping the mainstream narrative on technology and development [47, 48]. This discourse paves the way for us to discard social responsibility by instead promoting a notion of technological neutrality as an enlightened longer-term vision. The most powerful logic of this vision is its validation in the transformation the technology artifacts have offered the one middle-class, now global, Indian engineer.

In agriculture, as with other domains such as health care, the politics of expertise associated with a digital artifact became a driver of the projects themselves. Ramachandran, in her study of community health care in remote rural Orissa, found that a mobile device was a symbol of status for a community health worker and that citizens paid more heed to advice coming from a mobile [16]. The rural Indian imaginary of computing was based on who one saw using computers, whether in the mainstream media such as aspirational urban characters, or in one's rural surroundings such as people in positions of relative power (officers at a village bureaucracy, clerks at a bus station), or, as was repeatedly noted by children and adults alike, lead characters in movies [2]. Even in projects that were contextually careful about how technology was introduced, the ways stakeholders imagined computing artifacts highlight the symbolic value of digital technology.

*I'm always the first one [in the village] to implement new methods and technology in agriculture — I have everything in terms of technology here. Everybody comes to see things at my place. Even Avaaj Otalo — I am the first one to get it in this place. So many experts and scientists are friends with me and I tell them about Avaaj Otalo. When they are here they ask to see it and I show them how Avaaj Otalo works. They are impressed by how much modern technology and knowledge I have. It is a matter of pride for [my family] [49].*

Another domain where the language of expectation is associated with digital technology, especially from the supply side of people looking at the community of users from the outside, is seen in the accessibility discourse. Unlike with some of the other areas of ICTD, in which the object of development is embodied in the recognizable marginal self of the farmer, fisherman, or school-child, people with disabilities have traditionally been at an intersection of marginalities, separating them from the mainstream development and nation-building discourse. The news media and government spotlighting the state-of-the-art possibilities of laboratory accessibility technology have further brought to the public imagination the revolutionizing potential of technology — in ways very similar to the discourse on crop prices' potential to revolutionize farming, or the OLPC's role in fixing primary education.

*An example is a project of Microsoft, 'Cities Unlocked,' using advanced GPS and smartphone technology to help the visually impaired navigate cities on their own. It comprises an over ear headphone or goggles including an accelerometer, gyrometer, compass and speakers in different parts of the headphones to give the impression of sound coming from different directions. One simple click of 'orientate' button by the user on Bluetooth remote lets the user figure out his or her exact location and know details of his surroundings. — "ICT for the Differently Abled: Technological Interventions Solutions" [50]*

Using the state of the art to describe the possibilities of technology furthers the leapfrog discourse because it distances itself from what a more realistic possibility of the technology in contextual use looks like. The gap between the theoretical possibility of accessibility in a top-shelf phone model, for instance, and that afforded by a standard, commonly used device can be dramatic. Studies of accessibility in India show consistently that assistive technology tends to be expensive and its usability depends on weak infrastructure that includes technical issues such as networks, bandwidth, geospatial applications, and language resources, and a social infrastructure including accessibility laws, educational facilities, social attitudes, and the culture of employing persons with disabilities [51].

The notion of technology fixing the accessibility problem, i.e. the lack of social and economic inclusion of people with disabilities, has intensified under the most recent Indian government, which has strongly advocated the role of technology in various forms of social and economic development. In 2015, the government of India launched a widely media-covered initiative, Sugamya Bharat Abhiyan (Accessible India Mission), with a focus on what it termed in business speak as three "verticals": built environment, public transportation, and information and communication technologies [52]. The announcement of the program has led to at least one project looking at the value of the e-agriculture initiative, mKRISHI, in the lives of disabled farmers [53].

The reality of accessibility and social opportunities for people with disabilities is very different from that of others, with additional pressures of inaccessible social and cultural spheres serving as significant impediments. The drive to incorporate people into technology sector jobs has often only laid bare the deeper underlying social issues that technology does not address.

A case in point was the emergence of call center and transcription training, which came to be offered at virtually every institution providing screen reader training, and presented a means of including people with disabilities directly into the tech sector seen as the country's growth engine. This, however, created new forms of channeling, because learners were typically not introduced to computing and technology use training broadly but rather very specifically for transcription and call center operations. Thus when these jobs declined, so did job opportunities. In the next quote, a visually impaired man who went through a screen reader training course at a non-profit discusses the consequences of channeling toward Business Process Outsourcing (BPO) jobs like transcription, which were in the early 2000s promoted as a means of bringing people with disabilities into the workforce.

*There were 10 others who took training for medical transcription, but only 2 of us are actually doing it. The others are either doing some other job like basket weaving, etc., or they are studying. In software companies like IBM, Infosys, etc., they ask for 15 years' experience and I don't understand why. — Medical transcriptionist [54]*

Untrained in using technology as a tool for basic white collar jobs, as would be typical for sighted professionals, many such people quickly dropped off the job market when their narrow skills were no longer in demand. The promise of technology was undermined both by the lack of recognition for the underlying structural inadequacies (i.e. lack of work for disabled people) and the narrowly applied "solution" of transcription training. The true challenge for ICTD work in India was that the results arguably mattered little. It was the potential that mattered. The news coverage of a vast range of ICTD-related projects peaked right when the projects began; how they ended would matter little.

## 5. A HOLOGRAM FOR THE CITIZEN

The aspirational environment around technology use allows us to frame the brand image of Narendra Modi as carried out by his team while he was Gujarat chief minister, and eventually leading up to and post his campaign for prime minister. Much work has already suggested the ways in which Modi used social media to rebrand himself as a tech-savvy modernizer, offsetting his previous image as a right-wing hardliner [55, 56, 57]. Modi's campaign chose technology both as a means of outreach, by creating a direct channel to the citizenry bypassing traditional media, and as a physical artifact of brand enunciation, by incorporating imagery and discussion of technology into his self-presentation on mainstream and social media.

Modi was among the early Indian political figures to invest in a significant online presence. By 2003, within 2 years of the infamous Godhra riots, which Modi himself was indicted for by the Supreme Court, Modi had his own website boasting a history of the leader, an accounting of his achievements, an archive of events, and press releases. His website emphasized that technology revolutionized governance because its affordances enabled accessibility to the leader for the connected citizen, who could now

track Modi's appearances and speeches and also communicate directly with him by sending emails or requesting a meeting, all of which could be done online.



**Figure 4: Publicly posted tweet on e-Governance during Gujarat chief ministership (17 October 2011)**

The notion of a technology-mediated interface between the citizen and the polity remained central to Modi's purported political vision. We found in our research into the content and topical frequency of Modi's Twitter tweets that "technology" and "development" were among the top five themes of his social media messaging since 2009, and unlike other themes that came and went during elections, these were consistently part of his output [55]. In addition to ICTs more generally, Modi specifically referred to e-governance both as a reason for his successful tenure helming Gujarat and as a part of his vision for leading India (Fig. 4). Modi's embrace of e-governance was performative in both the regularity with which he discussed it and the language of modernity with which he referred to it, as we see in this tweet from October 2011 (Fig. 4).



**Figure 5: Publicly posted tweets from Modi on the role of technology in a vision for India (21 March 2013, 14 Jan 2014)**

The use of social media was a turning point in Modi's online brand management. While he started using Twitter and Facebook in 2009, his use of social media became consistent only in 2011. It was also in this period that brand managers were hired to work on Modi's media image [58], following which he used plenty of crafted wording and aspirational language in the text of the tweets (Fig. 5).

In the two tweets in Fig. 5, technology terms are used with alliteration, with the wordplay meant to signal a familiarity with modern business jargon. Alongside the use of language, Modi used visual images as an important part of his political rebranding. The images of Modi to emerge late in his tenure as Gujarat chief minister showed him using technology, often surrounded by other

symbols of knowledge and learning. In Fig. 6, for example, Modi appears in a pensive mood with a laptop.



**Figure 6: Publicity image of Modi using a laptop during his tenure as Gujarat chief minister. (Credit: narendramodi.in)**

Such pictures offer a stark contrast to earlier non-staged images of Modi during public meetings, in which a strongman image was central to his public portrayal. Known informally as the Hindu Hriday Samrat (Emperor of Hindus), it was typical for him to be handed a sword when he got on stage for public addresses (Fig. 7).



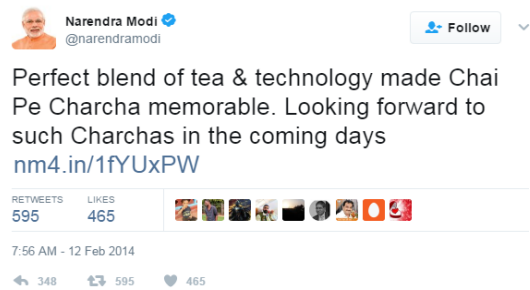
**Figure 7: Image of Modi on stage accepting a sword during a public address in Gujarat. (Source: Tehelka.com)<sup>5</sup>**

Unlike earlier Indian politicians whose technocratic claim was limited to posing alongside technology or figures associated with such, or encouraging technology-related investment or initiatives in their respective states, the images of Modi and technology went a step further in that they showed him actually using the technology. Figure 8 shows Modi with an open laptop, appearing meditative as he reads a financial newspaper alongside white birds, which signify peace; this image also shows his adeptness at multitasking because he also has an open biography of Barack Obama nearby. The seated image further suggests the ability to blur boundaries between work and play — Modi uses a laptop while relaxing in the outdoors.



**Figure 8: Publicity photo of Modi in the outdoors using a laptop. (Credit: narendramodi.in)**

The text of social media messaging complemented the tone of the publicity images. In addition to highlighting the role of technology in the development of India, as we see in Fig. 4, Modi was able to weave technology into his campaign outreach strategy by also presenting it as something that could strengthen not just development but the democratic process by allowing citizens to participate actively with their candidates. An example of this was his “Chai pe Charcha” initiative during the 2014 election in which he conducted technology-mediated hangout sessions at which he answered questions posed by voters (Fig. 9).



**Figure 9: A publicly tweet advertising the Chai pe Charcha (a talk over tea) scheme from Modi (12 February 2014)**

In addition to Modi himself, a regular cadre of supporters logged into these meetings, thus the discussion extended beyond the one-on-one with the leader to an active conversation among citizens. Using the casual language of a tea party, the initiative was branded as analogous to family and neighborhood social exchanges. The blending of the casual and the serious would eventually become a hallmark of Modi’s foreign policy approach in which he frequently clicked selfies (pictures of oneself taken on a smartphone) with heads of government and posted them to social media, suggesting a modern, laid-back form of global leadership (Fig. 10).

<sup>5</sup> <http://www.tehelka.com/2013/07/modi-epitomises-what-the-other-idea-of-india-could-look-like/>





**Figure 10: Selfies with heads of government in China and the UAE, publicly posted on the Twitter handle @narendramodi**

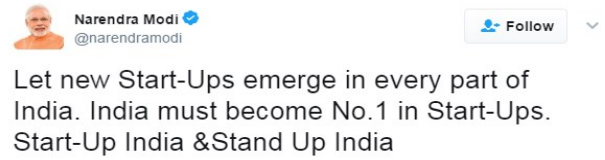
Perhaps the most enduring image of technological omnipresence during the election was Modi’s use of 3-D holograms during the campaign trail in which trucks traveled the countryside projecting live images of Modi delivering speeches (Fig. 11). The move captured the public imagination, both through the mainstream press coverage of the hologram speeches and as citizens — mostly poor citizens who did not have access to social media themselves — were exposed to the apparition of the leader appearing and speaking in their neighborhoods.



**Figure 11: Trucks carrying equipment for projecting 3-D holograms of Modi for speeches.**

Using social media regularly allowed for Modi to create mini brands around his government’s initiatives as well as ideas that he looked to popularize. The former category included his trademark technology and development programs — “Digital India” and “Make in India” — whereas the latter included sanitation programs, various citizen-outreach programs, and selfie campaigns, including

one to get people to fight gender discrimination by tweeting pictures of their daughters.



**Figure 12: Publicly posted tweets from mid-2015 after Modi’s completion of 1 year as prime minister (1 July 2015, 15 August 2015)**

In his tweets about technology, Modi suggests a natural segue between the values of digital technology and a leapfrog vision for India’s development. The language of corporatist modernity that accompanies tweets such as those in Fig. 12 proposes replicating a Silicon Valley story (Start-Up India) as not just a pathway for the elite, but as an ethos for the country as a whole (Stand Up India).

To this aspirational end, Modi did more than just craft tweets and speeches. During state visits to the United States, he made it a point to visit several major technology firms in the Silicon Valley including Google, Facebook, Apple, and Tesla, and took part in forums with leaders of several of these firms. Sundar Pichai of Google and Satya Nadella of Microsoft, both Indian-born and educated engineers who became success stories at tech firms that were household names in India, shared the dais with Modi at events. In this way Modi celebrated the Silicon Valley engineering culture — one populated by self-identified middle-class Indians who went abroad for economic opportunities — rather than disdaining it as a loss to the home nation. In a series of speeches in New York, Silicon Valley, London, Melbourne, and other global cities, Modi

repeatedly referred to the notion of “brain circulation” as an alternative to “brain drain,” emphasizing that Indians had made their mark in the global economy at the click of a mouse.

Through his enthusiastic endorsement of technology and enterprise as a vision for India’s future, both in his direct messaging and in his creation of an online being, Modi has emerged as a powerful supply-side advocate of ICTD. However, beyond his choice to highlight this vision (instead of the more nationalistic ideal that has been typical to the conservative right), what makes his social media prowess essential to a contemporary analysis of technology and development in India is the widespread purchase of his message.

## 6. DISCUSSION

Throughout the ICTD tradition in India, we see that aspiration for better education, accessibility, and political rehabilitation is mediated through the technological object (the classroom computer, the assistive device, the selfie). The symbolic value of technology in each case helps propel the operational agenda rather than a priori empirical evidence of the likely outcomes. This becomes clear in the study of Narendra Modi’s use of mobiles, Twitter, and selfies to rebrand himself; his is an example of the symbolic value of technology in ICTD, a lens to understand the other cases. His social media persona incorporates the unassailable ethos of middle-class modernity that has come to define the Indian pathway to the global stage. It is a seductive logic precisely because rejecting it would be to question the possibilities on which national aspiration for much of two decades has hinged.

In interrogating the symbolic value of technology we must examine both its implicit purchase, as with the expectation that technology can fix challenges with accessibility and education, and explicit articulation, as with Narendra Modi’s social media output and its appeal. The problem of agency in ICTD is not that the marginalized have been hoodwinked into accepting a vision of technology-driven modernity. Toyama’s work, if anything, makes clear that the wealthy and highly educated have been victims of their own discourse [21]. The allure of technology-aided development is that it is predicated on an optimistic discourse that rests on a selective interpretation of human and collective capabilities.

ICTD has long used theoretical frames from capabilities approaches [59, 60, 61]. In Amartya Sen’s words, enhancing people’s freedoms is “not just as an end objective, but also as the primary means to achieving it.” Herein lies the primary conundrum. Can people’s freedom be isolated from the effects of an often misplaced discourse of technology, or is their freedom to be measured as their ability to appropriately read and encounter that discourse? The former argument is fraught with undermining the agency of people buying into an ICTD vision of the future; the latter argument becomes impossible to measure. Kleine’s [62] influential call to closely examine the object of development in ICTD likewise uses a choice framework, which proposes that the fundamental problem is a need for more consultation with the end users and, in the endgame, to seek understanding of whether technology enables individuals better ability to choose options for their own lives. Choice frameworks do help us understand ways in which agency is expanded, but as with other evaluative approaches, they are fundamentally outcome-related. The issue with these approaches is that they assume that individuals’ capabilities can be appropriately estimated.

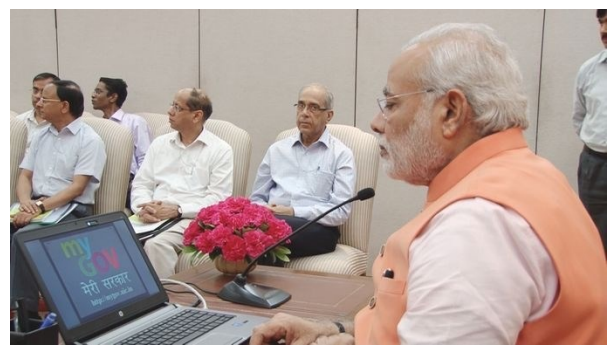
The difference between the supply-side acceptance of the discourse and the demand-side acceptance is the genuine lack of consequence

for one side, which allows its alienation from the conditions of the latter to perpetuate. However, we cannot blame everything on an all-encompassing deception by a global popular discourse of technology. The extension of what middle classes accept as fuel for development into the reality of those who are socially excluded has at its heart a willful dismissal of the structural factors that enable the middle classes to succeed to begin with.

In the traditional ICTD cases discussed, the discourse of optimism was widely accepted by all parties involved, even when the intended recipients fully recognized the shortcomings of their existing access, such as the resource-poor schools or inaccessible public spaces. The ascription of neutrality to the computing artifact is central to the choices people articulate. With weak institutions, the state and its individual constituents are seen as unpredictable elements, whereas the abstraction of a device offers a firm neutrality.

In many of the ICTD cases highlighted above, the symbolism of the artifact masks the weak understanding of the technology and its affordances. Understanding what qualifies as an actual computer education underestimates the complexity of computational work as rural parents claim “My child knows computers” based on children’s ability to start a computer. Likewise the gaps between laboratory experimental technology and real-world use of assistive technology presents a massive gap in a functional understanding of accessibility.

However, the most important symbolic case of technology emerges in distillation of ICTD principles in Modi’s rebranding and constant messaging about technology. The image of the engineer–entrepreneur as an archetype for the model citizen is constructed on notions of knowledge and hard work rather than enabling infrastructures. This narrative finds an exemplar in Modi, the son of a poor tea seller and a grass-roots worker for a political party who rose up the ranks and turned to technology as his guiding light. This individualist ethic stands in contrast to earlier waves of government based on welfarist notions of social equity. The “evolution” of Modi on social media is also a means for citizens, particularly those publicly unaffiliated with (or embarrassed by) elements of the social conservative values of the Bharatiya Janata Party (BJP), to support him.



**Figure 14: Publicity image of Modi, as prime minister, sitting with a group of bureaucrats, looking at the MyGov citizen interface (Credit: narendramodi.in)**

Modi’s rebranding is emblematic of the larger aspirational logic that regulates the citizen-state relationship. As the association with technology transformed the Indian engineer to a global elite, it likewise had agency in and of itself in moving him from a social conservative populist to a tech-savvy modernizer. In Modi’s technocrat, we are offered the same seductive logic of change that

the flow of ICTD projects over the years offered that an underdeveloped population or scenario can be altered with the addition of a technological artifact.

In Fig. 14, Modi, staring at a screen with the MyGov portal as his bureaucrats watch, emphasizes that the leader's vision goes outward to his citizenry (a close look at the picture reveals a static image on the screen). Modi's political vision is distinct from both Gandhian and Nehruvian philosophies, arguably the two most important schools of thought in post-independence India. Modi's technocratic vision differs from India's first prime minister Nehru's in that it was fundamentally collectivist and saw big science working for the broad social good. Modi's hero is the entrepreneurial technologist. In this, his social vision differs from that of Mahatma Gandhi, whose focus of interest and intervention was the village, and not the individual.

Herein lies perhaps the most lasting legacy of Modi in the Indian political system — the creation of a technological self. This technological self has been effectively put forth as a political vision that works not just for the elites, but just as well for the poor. Modi, the son of a tea seller, in his own selfie-clicking body represents the vision of success for the middle- and lower-middle-class Indians. His success reinforces the idea, at the heart of ICTD, that a neutral, technologically assisted solution is there for longstanding social ills — but also, and critically, that a person who represents this modern, enlightened technocratic vision cannot concurrently be a politically illiberal thinker because those two notions would appear to be at odds. When there was a push for cashless payments or citizen tracking using technology, it was attributed to Modi's vision. On the other hand, re-emerging Hindutva political movement, which was central to Modi's early career and has led to the beef ban and several lynchings of Muslims under his government, is an issue on which Modi stays silent, and for which the RSS along with a growing movement of unchecked fundamentalists are deemed responsible [63, 64].

## 7. CONCLUSION

The November 2016 demonetization, in which the government announced a ban of all Rs. 500 and Rs. 1000 banknotes, representing 86% of all Indian currency, Modi used anti-corruption, and the need to move to a technology-driven, cashless economy as the major impetus [65]. The move triggered unprecedented chaos, and Modi had to address the nation to justify the move, and ask for peoples' support for it. During his citizen address program, called "Mann ki Baat" (Words from the Heart), he spoke in first person, directly to the people. Modi invoked technology, and delivered what would make for a textbook ICTD speech.

*I need your help and I am very sure that millions of young people of our country will accomplish this tremendous task. You just do one thing, take a resolve today itself that you will yourself become a part of the 'cashless society'. Every technology needed for online spending will definitely be available on your mobile phone. But not only this, you must devote half an hour, one hour or two hours daily to educate at least 10 families about what this technology is, how this technology is to be used, how to download the Apps of your banks, how to spend money from one's account, how to make payment to shopkeepers. Also teach the shopkeepers to conduct their business with this technology.*

*You have to voluntarily lend your leadership to this great campaign, this Maha Abhiyan, to create a 'cashless society', to eradicate corruption from our country, to abolish the scourge of black money and to help people in overcoming their difficulties and problems. Once you teach the poor people about the usage of Rupay Card, they will shower their blessings upon you.*<sup>6</sup>

Arguably, the software engineer is no longer the paragon of modernity, it is the average citizen, redefined by technology — whether through identification cards for all or technology-enabled payment systems. Digital technology is now an all pervasive means of governmentality in which the citizen subject is constantly mediated in his or her relationship to the state through technology.

In this "post-software engineer" phase, citizenship itself is defined by one's incorporation within a technological frame of being. From being a political system driven in general elections by populist campaigns anti-poverty and social equity, we saw in the 2014 election campaign and thereafter a new form of technological subject — defined by a quasi-mandated Aadhaar card, mediatized by social media, pushed to digital transaction by demonetization. This did not emerge in a vacuum. Years of ICTD have laid the ground for the construction of a certain kind of legitimate political being, and by extension, a legitimate citizen.

The problem with ICTD is not what it proposes, but what it explicitly excludes. What questions does a technological modernity allow one to ignore, in the name of progress, in the name of development? Modi's story shows not only that a politician's contested sectarian may be seconded to his embodiment of a technocratic vision. In this, it is not just important that Modi is able to rebrand for a new political constituency. Rather it matters that his new image allows an easy means for his existing votebank to present support of the leader as attributable to his tech-savvy credibility rather than his social positions. Modi is also by no means alone — a host of leaders with problematic political credentials in recent years, including Paul Kagame of Rwanda and Hun Sen of Cambodia, have invested in branding themselves as tech-savvy, and communicating this directly through social media.

The acceptance of the proposal for technology in place of fixing schools or accessibility can be directly linked to the acceptance of a technocrat, overriding his image as a political actor who for most of his career was known as an extreme right-wing ideologue. Technology has provided the most potent and effective symbol for rehabilitation in the public sphere. As with the pleasing potential of a world rectified by ICTD, the story of Narendra Modi's newfound technocracy is in fact a story about those it appeals to.

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## 9. REFERENCES

1. B. Latour and S. Woolgar. 2013. *Laboratory Life: The Construction of Scientific Facts*. Princeton University Press, Princeton, NJ.

<sup>6</sup> <http://www.narendramodi.in/text-of-pm-s-mann-ki-baat-address-on-all-india-radio-on-27-november-2016--533318>

2. Joyojeet Pal. 2010. Rajnikant's laptop: Computers and development in popular Indian cinema. *Inform. Tech. Int. Dev.* 6, 2 (Summer 2010).
3. Nathan Ensmenger. 2012. The digital construction of technology: Rethinking the history of computers in society. *Tech. Cult.* 53, 4, 753-776.
4. Leela Fernandes and Patrick Heller. 2011. Hegemonic aspirations: New middle class politics and India's democracy in comparative perspective. *Crit. Asian Stud.* 38, 4, 495-522.
5. Gowri Vijayakumar. 2013. "I'll be like water": Gender, class, and flexible aspirations at the edge of India's knowledge economy. *Gender Soc.* 27, 6, 777-798.
6. Jerome S. Bruner and Leo Postman. 1948. Symbolic value as an organizing factor in perception. *J. Soc. Psychol.* 27, 2, 203-208.
7. Michel Foucault. 1971. Orders of discourse. *Information* 10, 2, 7-30.
8. Kamal Hoshi Kapadia. 2008. *Developments after a Disaster: The Tsunami, Poverty, Conflict and Reconstruction in Sri Lanka*. Ph.D. Dissertation. University of California, Berkeley, CA. UMI Order Number: 3353388.
9. Kevin Robins and James Cornford. 1990. Bringing it all back home. *Futures* 22, 8, 870-879.
10. Michael Punt. 2000. *Early Cinema and the Technological Imaginary*. Cromwell Press, Wiltshire, UK.
11. Richa Kumar. 2004. eChoupals: A study on the financial sustainability of village internet centers in rural Madhya Pradesh. *Inform. Tech. Int. Dev.* 2, 1, 45-73.
12. Mark Warschauer and Morgan Ames. 2010. Can One Laptop per Child save the world's poor? *J. Int. Affairs* 64, 1, 33-51.
13. Shalini Gulati. 2008. Technology-enhanced learning in developing nations: A review. *Int. Rev. Res. Open Distrib. Learn.* 9, 1 (February 2008).
14. Hamish S. F. Fraser, Paul Biondich, Deshendra Moodley, and Peter Szolovits. 2005. Implementing electronic medical record systems in developing countries. *J. Innov. Health Inform.* 13, 2, 83-95.
15. L. E. Graham, M. Zimmerman, D. J. Vassallo, V. Patterson, P. Swinfen, R. Swinfen, and R. Wootton. 2003. Telemedicine — the way ahead for medicine in the developing world. *Trop. Doct.* 33, 1, 36-38.
16. Divya Ramachandran, John Canny, Prabhu Dutta Das, and Edward Cutrell. 2010. Mobile-izing health workers in rural India. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM Press, New York, NY, 1889-1898.
17. Richard Heeks. 2001. *Understanding e-Governance for Development*. Institute for Development Policy and Management Manchester, Manchester University Press, Manchester, UK.
18. William Mazarella. 2006. Internet X-ray: E-governance, transparency, and the politics of immediation in India. *Pub. Cult.* 18, 3, (October 2006), 473.
19. Annalee Saxenian. 2005. From brain drain to brain circulation: Transnational communities and regional upgrading in India and China. *Stud. Comp. Int. Dev.* 40, 2, (June 2005), 35-61.
20. Richard Heeks. 2008. ICT4D 2.0: The next phase of applying ICT for international development. *Computer* 41, 6.
21. Kentaro Toyama. 2015. *Geek Heresy: Rescuing Social Change from the Cult of Technology*. PublicAffairs, New York, NY.
22. Janaki Srinivasan and Jenna Burrell. 2013. Revisiting the fishers of Kerala, India. In *Proceedings of the Sixth International Conference on Information and Communication Technologies and Development: Full Papers-Volume 1*. ACM Press, New York, NY, 56-66.
23. Solomon Benjamin, R. Bhuvaneshwari, and P. Rajan, Manjunatha. 2007. *Bhoomi: 'E-governance', or, an Anti-politics Machine Necessary to Globalize Bangalore?* CASUM-m Working Paper.
24. Nicola Dell, Vidya Vaidyanathan, Indrani Medhi, Edward Cutrell, and William Thies. 2012. Yours is better!: Participant response bias in HCI. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM Press, New York, NY, 1321-1330.
25. Komal Gupta and Sahib Sharma. 2017. BHIM-Aadhaar platform launched, advancing PM Modi's digital push. *LiveMint*. Retrieved Sept. 18, 2017 from <http://www.livemint.com/Industry/F7UNqEPpaZhUiZA1qxdHyH/PM-Narendra-Modi-launches-BHIMAadhaar-platform-with-incent.html>.
26. Salim Lakha. 1999. The state, globalization and Indian middle-class identity. In Michael Pinches (Ed.). *Culture and Privilege in Capitalist Asia*. Routledge, London, UK, 251-274.
27. Kavita Philip. 2016. Telling histories of the future: the imaginaries of Indian technoscience. *Identities* 23, 3, 276-293.
28. Neil G. Ruiz. 2014. The geography of foreign students in U.S. higher education: Origins and destinations. Global cities initiative: A joint project of Brookings and JPMorgan Chase, Washington, DC.
29. Rudolph, L.I. and S.H. Rudolph, Iconisation of Chandrababu: Sharing sovereignty in India's federal market economy. *Economic and Political Weekly*, 2001: p. 1541-1552.
30. Susanne Hoerber Rudolph and Lloyd I. Rudolph. 2002. New dimensions in Indian democracy. *J. Democracy* 13, 1, 52-66.
31. Joyojeet Pal. 2008. Computers and the promise of development: Aspiration, neoliberalism and "technolity" in India's ICTD enterprise. A paper presented at Confronting the Challenge of Technology for Development: Experiences from the BRICS (May 2008), University of Oxford, 29-30.
32. Paula Chakravarty. 2001. Flexible citizens and the Internet: The global politics of local high-tech development in India. *Emerg. J. Stud. Media Comp. Cult.* 11, 1, 69-88.
33. Sunil Raman. 2009. India bans mobiles without 'code'. *BBC News*. Retrieved Sept. 18, 2017 from [http://news.bbc.co.uk/2/hi/south\\_asia/8106762.stm](http://news.bbc.co.uk/2/hi/south_asia/8106762.stm).
34. Elizabeth Chacko. 2007. From brain drain to brain gain: Reverse migration to Bangalore and Hyderabad, India's globalizing high tech cities. *GeoJournal* 68, 2-3, 131-140.
35. S. P. Gupta. 2002. Vision 2020. Planning Commission, Government of India, New Delhi, India.
36. Department of School Education & Literacy. 2003. Information and communication technology @ schools. Government of India, New Delhi, India
37. Preeti Mudliar and Joyojeet Pal. 2013. ICTD in the popular press: Media discourse around Aakash, the 'world's cheapest tablet'. In *Proceedings of the Sixth International Conference on Information and Communication Technologies and Development: Full Papers-Volume 1*. ACM Press, New York, NY, 43-54.
38. Meeta Sengupta. 2017. Impact of CSR on education sector. In *Corporate Social Responsibility in India*. Springer, New York, 33-50.



39. Prachi Srivastava. 2014. Under-financing education and the rise of the private sector: The case of India. *Revue internationale d'éducation de Sèvres*. Retrieved from <https://ries.revues.org/3863>.
40. Erik Byker. 2014. ICT in India's elementary schools: The vision and realities. *Int. Educ. J. Comp. Persp.* 13, 2, 27-40.
41. Joyojeet Pal, Meera Lakshmanan, and Kentaro Toyama. 2009. "My child will be respected": Parental perspectives on computers and education in Rural India. *Inform. Syst. Front.* 11, 2, (April 2009), 129-144.
42. Suresh K. Bhavnani, Apala L. Chavan, Isha Jain, and Sudhanshu Maroo. 2011. How can a computer be useful to you? A feasibility study to elicit perceptions of computers in rural India. In *AMIA Annual Symposium Proceedings*. American Medical Informatics Association Bethesda, MD.
43. M. S. Swaminathan. 2005. Mission 2007: Every village a knowledge centre. *The Hindu*. Retrieved Sept. 18, 2017 from <http://www.thehindu.com/2005/11/25/stories/2005112504941000.htm>.
44. Saravanan Raj. 2013. e-Agriculture prototype for knowledge facilitation among tribal farmers of North-East India: Innovations, impact and lessons. *J. Agri. Educ. Ext.* 19, 2, 113-131.
45. Rikin Gandhi, Rajesh Veeraraghavan, Kentaro Toyama, and Vanaja Ramprasad. 2007. Digital green: Participatory video for agricultural extension. In *Information and Communication Technologies and Development (ICTD 2007)*. IEEE.
46. R. Saravanan. 2010. *ICTs for Agricultural Extension: Global Experiments, Innovations and Experiences*. New India Publishing, New Delhi, India.
47. Chrisanthi Avgerou. 2010. Discourses on ICT and development. *Inform. Tech. Int. Dev.* 6, 3, 1-18.
48. Clayton M. Christensen, Michael B. Horn, and Curtis W. Johnson. 2008. *Disrupting Class: How Disruptive Innovation will Change the Way the World Learns*. McGraw-Hill, New York, NY.
49. Neil Patel, Deepti Chittamuru, Anupam Jain, Paresh Dave, and Tapan S. Parikh. 2010. Avaaj otalo: A field study of an interactive voice forum for small farmers in rural India. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM Press, New York, NY, 733-742.
50. A. Singh and K. Kumar. 2016. ICT for the differently abled. *Yojana* 60, 5, 41-45.
51. Joyojeet Pal, Priyank Chandra, Terence O'Neill, Maura Youngman, Jasmine Jones, Ji Hye Song, William Strayer, and Ludmila Ferrari. 2016. An accessibility infrastructure for the Global South. In *Proceedings of the Eighth International Conference on Information and Communication Technologies and Development*. ACM Press, New York, NY, Article 24.
52. Press Information Bureau. 2015. Accessible India Campaign (Sugamya Bharat Abhiyaan) to make India disabled-friendly. Government of India, New Delhi, India.
53. D. Singh, Karthik, Tiwari, Nar, Piplani, and Rajput. 2016. Digital inclusion for the differently-abled farmers. In *IEEE International Symposium on Technology and Society (ISTAS)*.
54. Joyojeet Pal and Meera Lakshmanan. 2012. Assistive technology and the employment of people with vision impairments in India. In *Proceedings of the Fifth International Conference on Information and Communication Technologies and Development*. ACM Press, New York, NY, 307-317.
55. Joyojeet Pal, Priyank Chandra, and V G Vinod Vydiswaran. 2016. Twitter and the rebranding of Narendra Modi. *Econ. Polit. Week.* 51, 8, 53.
56. Anirban K. Baishya. 2015. Selfies# NaMo: The political work of the selfie in the 2014 Indian general elections. *Int. J. Comm.* 9, 15.
57. Kawaljeet Kaur Kapoor and Yogesh K. Dwivedi. 2015. Metamorphosis of Indian electoral campaigns: Modi's social media experiment. *Int. J. Indian Cult. Bus. Manag.* 11, 4, 496-516.
58. Rajdeep Sardesai. 2015. *2014: The Election that Changed India*. Penguin, London, UK.
59. Yingqin Zheng and Bernd Carsten Stahl. 2011. Technology, capabilities and critical perspectives: What can critical theory contribute to Sen's capability approach? *Ethics Inform. Tech.* 13, 2, 69-80.
60. Jean-Yves Hamel. 2010. *ICT4D and the Human Development and Capabilities Approach: The Potentials of Information and Communication Technology*. University Library of Munich, Germany.
61. Geoff Walsham. 2013. Development informatics in a changing world: Reflections from ICTD2010/2012. *Inform. Tech. Int. Dev.* 9, 1, 49-55.
62. Dorothea Kleine. 2010. ICT4WHAT?—Using the choice framework to operationalise the capability approach to development. *J. Int. Dev.* 22, 5, 674-692.
63. Christophe Jaffrelot. 2017. Toward a Hindu State? *J. Democracy* 28, 3, 52-63.
64. Anuja Mohapatra. 2016. *Out of Saffron Ashes: Revival of Hinduva in India*. Honors Thesis. Baylor University, Waco, TX.
65. Amiya Bhatia and Jacqueline Bhabha. 2017. India's Aadhaar scheme and the promise of inclusive social protection. *Oxford Dev. Stud.* 45, 1, 64-79.