

Chapter 6

mHealth, Health, and Mobility: A Culture-Centered Interrogation

Mohan J. Dutta, Satveer Kaur-Gill, Naomi Tan and Chervin Lam

Abstract In this chapter, we examine the interplays of the symbolic and the material in the constructions of mHealth. By attending to the key themes that play out in discourses of mHealth, we examine critically the ways in which power plays out in the structuring of mHealth solutions. The articulation of mHealth as instrumental to generating positive health outcomes in communities across Asia erases the contexts within which mobile technologies are constituted. mHealth interventions reproduce the logics of the state and the market, reproducing communities as homogeneous and monolithic sites of top-down interventions.

Keywords Mobility · Community · Neoliberalism · Mobile health

6.1 Introduction

Mobile platforms offer new opportunities for health communication scholarship. mHealth (or mobile health), which refers to the use of “emerging mobile communications and network technologies for healthcare,” is an emerging innovation that capitalizes on the features and ubiquity of mobile phones across the globe to facilitate communication between patients and health institutions, to deliver health services, and to promote health preventive behaviors (Pattichis, Istepanian, & Laxminarayan, 2006, p. 3). The World Health Organization’s global survey (WHO, 2011) reveals a range of uses of mobile technologies in health communications. Such technologies are being used to improve (1) communication from patient to health service providers (e.g., health hotlines or call centers); (2) communication from health service providers to patients (e.g., SMS reminders for appointments, compliance with treatments, or information to raise awareness); (3) health consultations over the mobile phone; (4) communication among health services in emergencies; (5) monitoring and surveillance of patient’s health; and

M. J. Dutta (✉) · S. Kaur-Gill · N. Tan · C. Lam

Faculty of Arts and Social Sciences, National University of Singapore, Singapore, Singapore
e-mail: cnmmohan@nus.edu.sg

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(6) the accessibility of databases of patient records (World Health Organization, 2011). mHealth applications in these areas of provider–patient communication, health services delivery, and health communication interventions promoting health behaviors have evolved globally. mHealth innovations from Asia have formed the cornerstone of narratives of Asian innovations in health care, circulated globally as markers of the power of mobile technologies in disseminating health.

On one hand, technologies such as mHealth are often discursively and materially constructed as the solution to health and social inequalities Asia faces today (Amrith & Amrith, 2016; Rama, Béteille, Li, Mitra, & Newman, 2014; Rhee, 2013), especially because of the large-scale penetration of mobile technologies in hard-to-access spaces in the region (World Bank, 2008; Kim, 2010). On the other hand, the concept of effectiveness of mHealth raises critical questions (Tomlinson, Rotheram-Borus, Swartz, & Tsai, 2013). However, missing from this literature is a theoretically informed framework for examining the flows of power, the structures of mHealth, and the concepts of communication that are embodied in mHealth solutions (Dutta, 2015). Beyond looking at the implementation of specific technology-based solutions offered under the framework of mHealth, it is worthwhile to examine the overarching power dynamics and interpretive frames that shape mHealth and constitute the textures of mobilities through mobile devices that deliver health and care. Particular to the Asian narrative of mHealth is the articulation of the power of mHealth in delivering health and care to under-reached spaces across Asia.

Both sides of the mHealth debate noted earlier posit technology as the elixir to structurally and spatially constituted problems of health and care (Dutta, 2015). These logics of health and care delivered through technology take-for-granted the larger structures that shape access to and utilization of health, and the terrains of power within which meanings of health are constituted and negotiated (Dutta, 2005). In this chapter, we draw upon the culture-centered approach (CCA) (Dutta, 2008, 2011, 2015) to interrogate the discourses of mHealth that frame health as a commodity to be delivered through privatized mobile technologies. As an alternative to this dominant discourse, we posit a culturally centered framework which aims not only to improve health outcomes in a narrow sense but also to foster communicative infrastructures for health justice. In CCA, the value of mobile phones for attaining and maintaining health and well-being lies not in their technical wizardry but in the ways they become embedded in existing patterns of mobility, vernacular health discourses, and locally constituted activist and advocacy movements seeking better health.

6.2 mHealth and Health Outcomes

Although mHealth in Asia has captured the interest and excitement of many scholars (Labrique, Vasudevan, Chang, & Mehl, 2013), the extent of mHealth's contribution to health outcomes in the region has been a source of contention. On

one hand, proponents of mHealth attest to its effectiveness, often framing it as an omnipotent solution to problems of poor health in Asia (Istepanian, Laxminarayan, & Pattichis, 2006), and on the other hand, others are questioning the evidence for corollary health outcomes tied to mHealth (Tomlinson et al., 2013). This section explores the narratives of effects, examining closely the ways in which these narratives are deployed toward establishing the hegemony of transnational capital operating in the mHealth sector. Claims of effectiveness of mHealth in Asia serve as the basis of strategic mobile technology expansion, with limited attention to the health outcomes that can be attached to the grand claims of techno-modernity.

Given the great enthusiasm for mHealth and the significant investments poured into developing mHealth gadgetry and applications (Istepanian et al., 2006), it is unsurprising and inevitable that there is great hope in mHealth being useful. Tomlinson and colleagues (Tomlinson et al., 2013) opine that there is an enticing appeal to the concept of mHealth because it should, in theory, be effective, in removing the barrier of traveling for healthcare services. For the poor, this would entail a significant financial relief; they need not compromise a day's wage in order to travel, and those who cannot afford to travel need not. For those who are not poor, mHealth would bring about greater convenience, quicker access, and also quicker gratifications. At least, in theory, mHealth should deliver these benefits. There are findings that encourage this postulation; for example, in Indonesia, the *Midwives with Mobiles* project suggested that less skilled and remote community healthcare workers were able to deliver information to the centralized provincial hospital, via a JAVA-based mobile data delivery system (Chib, 2013). Bakshi et al. (2011) contend that mHealth is advantageous for developing countries because it requires low start-up costs and mobile phone services are affordable even to the poorest areas. For example, in India, there were more than 500 million mobile phone subscribers in 2010, and the rural subscriber base amounted to approximately 190 million (Shukla & Sharma, 2016). Shukla and Sharma also suggested some positive examples of mHealth; for example, the Health Information Helpline in India, which is a nonemergency helpline aimed at reducing the minor ailment load on the public health system, was a success and received over 70 million calls. As another example, Apollo, a private healthcare group, offered mHealth services to large numbers of Indians for as little as 2 cents per minute of phone call; consumers could call anytime and anywhere to get advice on medical or health queries from a panel of doctors (Shukla & Sharma, 2016). In Bangladesh, Khan and colleagues (Khan et al. 2015) found that mHealth was useful in addressing the country's shortage of trained health professionals; village doctors could call and get support and expert opinion from trained doctors. Thus, the use of mHealth is expansive and, in general, there is positive evaluation and expectation of its contributions to health outcomes.

Of note here is that the claims made in the above illustrations have more to do with health-related finance and time-saving outcomes than health outcomes per se. For example, there are very few pretest–posttest studies that show how mHealth directly improves the health of a community. In this sense, the methodological base for claiming effect is fairly weak. For instance, we lack a study that investigates the

number of clinic visits within a community before and after implementation of mHealth services. Concrete cases of health outcomes derived from mHealth have been few and far between (Hall, Fottrell, Wilkinson, & Byass, 2014). Moreover, many of the proposed benefits of mHealth have been largely speculative in the literature (see Hall et al., 2014). For example, scholars may speculate about mHealth's potential in transforming health care (Steinhubl, Muse, & Topol, 2013), posit psychological mechanisms in using mHealth to combat obesity (Castelnuovo et al., 2014), recommend the potential use of mHealth apps for managing cannabis use (Norberg et al., 2015), or opine that mHealth has the potential to aid asthma self-management (Pinnock, Slack, Pagliari, Price, & Sheikh, 2007). However, such postulations remain largely unsubstantiated and there is yet to be concrete evidence justifying the use of mHealth, prompting scholars to pause for a "reality check" (PLOS Medicine Editors, 2013). In other words, the claims of large "effects" often remain unsubstantiated.

According to Tomlinson et al. (2013), there is little evidence regarding the likely uptake, efficacy and effectiveness of mHealth initiatives, many of which do not progress beyond pilot studies. Hall et al. (2014) concur with the dearth of evidence for health outcomes, suggesting that most 'evidence' related to mHealth is predicated on pilot studies and small-scale implementations and are sometimes merely anecdotal [see also Kahn, Yang, & Kahn (2010) and Gurman, Rubin, & Roess, 2012]. Chib (2013) posited that the majority of studies on mHealth in low income and low- and upper-middle-income countries have techno-optimistic views and have little theoretical support. The potential effectiveness of mHealth also appears to be contingent upon the environment it is employed in; mHealth may be more effective in a community that is technologically fluent, has strong organizational infrastructure, and has adequate resources to implement an mHealth initiative. In contrast, mHealth may not operate as effectively within a community that is not technologically proficient, is lacking in infrastructure, and has limited staff and finances to carry out an mHealth initiative. For example, an mHealth app that works with a community in New York City may not—and would most likely not—work as well in a different community, say, in rural India. As another example, Bullen (2013) suggested that implementation of mHealth in Cambodia would be challenging because of the country's system, culture, and dynamics; Bullen opined there were four hurdles: first, most Cambodians have multiple Subscriber Identity Module (SIM) cards, thus the frequent switching of SIM cards may compromise mHealth efforts. Second, most mobile phones used by Cambodians are not smartphones, and thus there are limited functionalities. Furthermore, most mobile phones do not support the national language, Khmer, and most Cambodians do not understand English. Third, many Cambodians do not own mobile phones but share phones instead. Fourth, as there is much unregulated commercial spam in Cambodia, phone users may mistake mHealth efforts as spam. Because the lived experiences, values, beliefs, and culture of "western" countries are markedly different from Asia, an mHealth app cannot be expected to replicate results from one

to the other. Therefore, any mHealth effort must be tailored according to the culture in which it is employed.

Despite substantial scholarly critiques, the mHealth industry is rife with claims of miraculous effects, removed from the everyday lived experiences of communities with the health effects of mHealth. Moreover, the framing of Asia as a site for mHealth innovations paradoxically erases the cultural contexts that shape the meanings people make of the technology and the ways in which they interact with the technology in their lived experiences (Dutta-Bergman, 2005). In other words, the story of mHealth crafted in the dominant sites of knowledge production (international funders, academics in global organizations, mobile corporations, technology corporations, health corporations, civil society groups) on one hand reproduce the empirically removed claims about the transformative power of the technology, and on the other hand, obfuscate the cultural contexts within which the technology is constituted in the daily lives of community members. In the next section, we will interrogate the ways in which the concept of the community emerges in articulations of mHealth.

6.3 mHealth and Community

The mobile phone has been studied as a tool that has the potential to narrow the digital divide, specifically across communities that are typically disenfranchised and resource poor. Community therefore emerges as a conceptual category in the framing of mHealth. With the popularization of the mobile phone across the globe and more specifically in Asia, the mobile phone today is available and affordable to almost all strata and socioeconomic classes in many societies of Asia. This claim of the ubiquity of mobile phones in Asia forms the bedrock of the knowledge claims of mHealth. To illustrate, the mobile phone is used by a large proportion of the Indian population, including 16.6 million rural users that consists of new subscribers each month (Cumiskey & Hjorth, 2013). Similarly, in the Philippines, connectivity of mobile phones in sparse and topographically challenging regions are common, with prepaid mobile services more common among low-income users (Zapata, 2016). Zapata (2016) thus, opines that “the pervasiveness of the mobile phone even in remotest communities is noteworthy of attention” (p. 4).

The adoption of the mobile phone has led to the belief that mHealth interventions can be potentially transformative for communities where healthcare services may be relatively inaccessible (Cumiskey & Hjorth, 2013). Asia has seen a significant number of mHealth interventions for the purposes of enacting behavior modifications for better health outcomes (Gurman et al., 2012). mHealth has been recognized as a technological advancement that has the potential to reshape the ways in which health services can be consumed by different segments of populations and communities in Asia that are often demographically, socially, and culturally, heterogeneous. This means having to provide a range of healthcare services that meet a wide variety of needs across diverse spaces, including previously

hard-to-reach communities (Fiordelli, Diviani & Schulz, 2013; Khatun, Heywood, Ray, Bhuiya, & Liaw, 2016).

Observing the growth of the mobile phone in various communities around the world, many medical and public health scholars see mHealth as potentially impactful in the delivery of healthcare services, especially in communities that face significant challenges accessing healthcare services for a myriad of reasons that will be discussed further in this chapter (e.g., Malvey & Slovensky, 2014; Olla & Shimskey, 2015; Post et al., 2013; White, Thomas, Ezeanochie & Bull, 2016). Malvey and Slovensky (2014) view mHealth as having an emancipatory potential in terms of the delivery of healthcare services for hard-to-reach communities around the globe, opining that current research has indicated that there has already been good consensus among patients and community health workers regarding the desire for provision of healthcare services through mHealth avenues (e.g., Chang et al., 2013; Nachega et al., 2016). Explaining the global interest by medical and public health scholars to implement mHealth applications in a bid to deliver healthcare services in areas with socioeconomic and geographical challenges in accessing good healthcare systems, infrastructures, and knowledge, scholars emphasize the emancipatory power of mHealth (Chang et al., 2013). A pervading discussion on mHealth in Asia relates to the viability and sustainability of mHealth interventions in communities that may often use texting or health applications to aid in patient care across a variety of health contexts, such as sharing educational resources with communities and the community's health workers often situated within nonurban centers (Atun, 2012; Chang et al., 2013; de Jongh, Gurol-Urganci, Vodopivec-Jamsek, Car, & Atun, 2012). These include rural and remote villages that may be geographically and topographically hard to access. Inherent then in the dominant notions of mHealth, are techno-deterministic notions of mHealth technologies as instruments for delivering health solutions devised by experts at knowledge centers (e.g., Manda & Sanner, 2014; Kay, Santos & Takene, 2011).

The role of community healthcare workers includes maintaining continued support in health decision making of these hard-to-reach communities. The scope of mHealth in Asia includes reaching out to remote communities on infectious diseases, chronic diseases, and maternal, and prenatal care. Community healthcare workers also support better provider-patient interaction for health decision-making among patients that may not typically have formal healthcare facilities (Chang et al., 2013; Atun, 2012). Community healthcare workers are an important stakeholder in mHealth success in Asia and are said to benefit significantly from mHealth services when working in isolated spaces. White et al. (2016) adopted a systematic review on healthcare workers' utilization of mHealth and found that workers were highly accepting of mHealth, and saw it as having important benefits for all stakeholders involved. Studies consistently indicate that mHealth has the potential to increase patient compliance if community health workers acquired and adopted mHealth technologies positively to better communicate with patients. However, sustainability issues of these technologies are still a challenge (White et al., 2016). Katz, Mesfin, and Barr (2012) found that mHealth was useful in the management of chronic disease among low-income patients. Upon investigating factors that

contributed to the success of the technology in health outcomes, the study found that success or failure depended on the role of the community healthcare workers' involvement in mHealth as opposed to the design, interface, or specific qualities of the technology itself. Additionally, in resource-constrained Asian countries that do not have substantially trained healthcare providers, community healthcare workers adopt mHealth technologies for instruction and guidance from experts such as doctors and nurses when dealing with patients and their care. In many Asian countries that make up the global south, mHealth projects are gaining traction as mHealth technology is seen to empower workers situated in rural areas through increasing knowledge, skills, and supervision, while integrating these workers in the national healthcare system. They are also trained in assisting with patient referrals and follow-up treatments (Khokhar, 2009; Watterson, Walsh, & Madeka, 2015).

Both community health workers and patients recognize that mHealth can alter the quality of patient care positively, but studies in these areas have found significant challenges and barriers that impede the use of mobile technology in delivering health services. These include inconsistencies in the kinds of smartphones used by community healthcare workers that lead to poor imaging of the condition, which in turn, causes difficulties in assessing and diagnosing patients (Asgary et al., 2016; Free et al., 2013). Additionally, a systematic review of mHealth interventions on community healthcare workers found that most interventions were overwhelmingly focused on the context of the global North, with many of them having limited success outside of that space (Free et al., 2013). Missing from these studies are the cultural contexts, and more specifically, the cultural contexts of Asia. Bangladesh is a popular example, since—with more than 20 current initiatives—mHealth is valued as a potential supplement to an over-burdened healthcare infrastructure which faces a significant shortage of healthcare workers (Khatun et al., 2016). In such celebrations of mHealth among communities in Asia however, the very notion of communities and their local contexts remain mostly absent.

6.4 mHealth and Hard-to-Reach Communities

mHealth technology has been used to mobilize health messages that range from inducing knowledge to increasing participation in campaigns that involve screening, immunization, or counseling among hard-to-reach communities. Essential to these articulations of mHealth technologies is the positioning of communities at the margins as recipients of expert solutions, carried by mobile technologies. These top-down, expert-designed health messages are meant to induce positive behavioral modifications among communities that may typically not have knowledge or access to such facilities, without institutionalized message dissemination (Kay et al., 2011). Despite mHealth being implemented in a variety of communities battling different medical challenges, studies on effectiveness and health outcomes have not

been promising, regardless of the desire by communities to adopt the intervention (Chib, 2013; Tomlinson et al., 2013). Moreover, the conceptualization of “hard-to-reach” communities frames these communities as inaccessible, constituted in the language of information deficit. Framing communities through the lens of inaccessibility perpetuates models of communication that are typically asymmetrical (Atkin & Wallack, 1990; Lupton, 1994), bulleting messages through tools of technology to modify individual behavioral change in these unworkable spaces. To add, the very theorizing of behavioral change as an individualistic act begins by already negating other key factors involved in the matrix of inequality and inaccessibility (Dutta-Bergman, 2005). Thus, experts removed from the communities and their experiences with mHealth, are in control of developing matrices and measuring change through individual behavioral indicators (Dutta, 2008, 2015).

Due to the nature of evaluation that focuses on behavioral change at the individual level, many studies investigating the use and efficacy of mHealth by communities have found a variety of challenges communities face when using different mHealth services. Despite high mobile penetration rates, low literacy levels affect how the mobile phone is used. Text messaging or using the mobile phone for the Internet may not always be functional for some populations, causing a lack of competency or misunderstandings in mHealth use (Agarwal, Perry, Long & Labrique, 2015; Chib, 2013; Khatun et al., 2016). Studies have also found that mHealth applications tended to be preoccupied with technical functions, as opposed to usability and content of the technology centered on the needs of the community using the technology (Schnall et al., 2016). The cultural threads of the community and their ways of knowing and understanding are secondary to the conceptualization of the application, which often leaves mHealth applications redundant or limited in use by communities. These cultural threads such as gender roles, collectivistic epistemologies of knowing, living, and understanding, and/or power denominations in communities are just a few ways to think about the heterogeneity that exists across communities, and their relevance in making sense of how mHealth comes to be shaped in communities. Studies looking at mHealth and culture, reflect these challenges. Khatun et al. (2016) discusses the inability to use mHealth services by some Bangladeshi women without seeking permission from their spouses. These challenges force researchers to think through questions tied to culture, in the enactment of privacy and security as valuable in the designing of mHealth applications (Bajwa, 2014). In other scenarios, certain communities were found to have preferences for mobile phone functions such as voice communication instead of text messaging (Thomsen et al., 2016).

In studying a remote village *Chakaria* in Bangladesh, researchers found that village doctors, who constituted the informal healthcare providers for village members, sought knowledge through call centers run by formal doctors. This system was extremely useful in this setting where there were significant shortages of formal healthcare providers. Village doctors, however, reported challenges such

as inaccessibility and unfamiliarity with the technology and with the formal doctors that were working with them through the call centers (Khan et al. 2015). Among vulnerable communities, uncertainty of mHealth applications may further inhibit use. Nacheha et al. (2016) found HIV-infected pregnant mothers feared unintended or accidental disclosure, and therefore had specific expectations, such as alerts and reminders they wanted to be sent within specific hours of the day. The specificity of timings regarding these alerts had to do with managing their privacy, so as to prevent their status as HIV-infected pregnant mothers from being disclosed. mHealth in Asia is also seen as a potential technology to overcome mental health stigmas, where mental health and suicide are viewed negatively. Note in these studies the absence of culture on the one hand, and the instrumental logics of conceptualizing culture on the other hand. The cultural spaces of community life and the meanings of health in these cultural spaces remain erased from the configurations of mHealth, turned into targets for top-down, expert-driven interventions.

Top-down understandings of how technology is used fail to account for the nuances in mediation of technology use and its manifestations in communities that have alternative ways of understanding and conceptualizing technology (Zapata, 2016; Chib, 2013). Jennings et al. (2016) therefore conclude that for mHealth interventions to be successful, communities must be engaged right from the onset of the intervention design, to fully understand the contextual and community complexities in health barriers, before moving into the distribution of mHealth services. As communities are largely shaped by these structural and cultural variances, mHealth application must assess and locate these differences in order to successfully develop an intervention that is meaningful and viable for hard-to-reach communities. Hall et al. (2014), after conducting a systematic review of mHealth among middle- and low-income communities, posit that mHealth continues to show positive signs for future interventions that are feasible for resource-poor communities. However, these claims of mHealth and their effectiveness in impacting community health outcomes ought to be situated within broader discussions of technology, state, and the market. Contemporary health discourses individualize health responsibilities and unburden states from addressing health disparities, depicting the overarching neoliberal ideology of organizing health (Dutta, 2015). By adopting techno-optimist solutions, such as mHealth, as solutions to inequalities, states can justify allocation of resources to the margins as inefficient, leaving the broader structures of inequality intact (Dutta, 2015).

6.5 mHealth, State, and Market

International organizations such as the United Nations, World Health Organization, and World Bank have expressed support for the implementation of mHealth initiatives to meet the Millennium Development Goals and are promoting such programs to member countries (WHO, 2011). In these neoliberal narratives of global

health, mHealth's intrinsic relationship with mobile phone technologies represents immense opportunities for bridging health disparities, obfuscating conversations on the fundamental barriers in terms of access for disenfranchised or hard-to-reach communities (Dutta, 2015). The mHealth literature thus far has tended to highlight only the potential of mobile phones in improving health outcomes of patients, but has yet to address broader structural issues, limitations, and pitfalls to do with the uncritical adoption of this new communication technology (Kaplan, 2006; Levin, 2012; Malvey & Slovinsky, 2014; McBride & Rimer, 1999). The framing of the state as a facilitator of market-based solutions of mobile health technologies takes-for-granted the very inequities in health outcomes that are produced by the large-scale penetration of these technologies into communities at the margins (Dutta, 2015).

In the dominant framework of mHealth, the role of the state is seen as crucial in building up the appropriate health applications or systems and communication infrastructure in order to support the use of mHealth and to harness its potential. As of 2014, Asia was the region with the highest number of mHealth and eHealth program implementations, driven by government investments in the healthcare sector (Healthcare Asia, 2014). However, it is estimated that only 67% of rural inhabitants globally are covered by a mobile-broadband network, compared to 84% of the general population (ITU, 2016). In the Asia Pacific, only 42.6% of the population have a mobile-broadband subscription, and the percentage of online users who have access to high-speed broadband in the developing world is substantially lower compared to developed countries (ITU, 2016). These statistics need to be further tempered by issues such as language and illiteracy, mobile phone literacy, and gender gaps in mobile phone ownership and usage, which affect the adoption of mHealth in Asia (Mechael, 2009). Therefore, despite the high number of mHealth programs being implemented, there remain fundamental structural and knowledge barriers that have yet to be addressed (Kaplan, 2006). On one hand, the prevalence of mHealth programs in Asia could reflect the popularity (and by extension, effectiveness) of such initiatives; on the other hand, this could also be indicative of the piecemeal nature of mHealth implementation in Asia, which could be in part due to a lack of proper infrastructure. Moreover, the very development of such infrastructure by the state deploys the logics of health to create new opportunities for privatization through new markets comprising of the poor and the underserved. The technology-driven agenda of the state shifts attention away from the role of the state in addressing social determinants of health upstream and healthcare structures and resources downstream.

The rise in popularity of mHealth has also resulted in a lucrative industry consisting of organizations, small to large, that build health applications and technology (Malvey & Slovinsky, 2014; Schweitzer & Synowiec, 2012). It is estimated that the mHealth industry will grow to US\$23 billion by 2017 (PricewaterhouseCoopers, 2012). While some initiatives are not-for-profit, most are

profit oriented, such as the creation of technological products and applications which could be sold and used in developing countries. Large multinational companies such as Johnson & Johnson, Merck, and GlaxoSmithKline are also increasing funding for mHealth projects in various parts of the world (Qiang, Yamamichi, Hausman, & Altman, 2011). Droppert and Bennett (2015) described how corporate social responsibility (CSR) initiatives are often tied to broader business objectives of companies and are strategized as an investment for future growth in the region. For example, representatives from pharmaceutical companies reported that their motivations for CSR include building up a country, its population, and its economy to prime the region for future economic expansion, or as a way to do market research which informs their business decisions (Droppert & Bennett, 2015). Health thus is diverted by the state into a new market opportunity for transnational capital, bringing together mobile technologies with health commodities. The state is reworked as an enabler of private capital, ensuring profits for both the bio and mobile technology industries.

While some initiatives are small-scale, informal, community-based, or disease/treatment-specific, others are scalable and integrated with formal health systems or telecommunication companies. Many of the initiatives are supported and funded by international organizations and universities. For example, the mCARE program aims to decrease infant mortality in rural Bangladesh by providing expectant mothers with mobile phones. This initiative, which is funded by USAID, the Bill and Melinda Gates Foundation, and the US Department of Agriculture, allows mothers to inform their health workers once they go into labor so that necessary medical treatment can reach the mother and child in a timely manner (Johns Hopkins Bloomberg School of Public Health, 2012). The interplays of imperial aid agencies, foundations, and the development sectors constitute an overarching framework of health that is fundamentally grounded in the individualization of health. In another example, CycleTel Humsafar, is a free SMS service in India introduced by the Institute for Reproductive Health (IRH) at Georgetown University and USAID. This service helps women and their partners with family planning using the “Standard Days Method” or the rhythm method. It also includes a family advice component, which is available through Nokia Life, an application only available through Nokia mobile devices. Note here the interplay of the logics of private capital with the agendas of private foundations, global development agencies and the nation-state.

Similar to CycleTel, many mHealth applications are the result of public–private partnerships (Schweitzer & Synowiec, 2012; WHO, 2011). In particular, telecommunication companies appear to be leveraging the potential of mHealth to provide health services that are pitched as significantly less costly compared to a visit to the doctor. In rural India, the telecommunications company Ericsson has partnered with Apollo Hospitals Group’s Apollo Telemedicine Networking Foundation in 2008 on an mHealth initiative that brought medical information and health advice to populations in remote villages and towns (Ericsson, 2008). This initiative was also intended as a way to promote the use of telemedicine through mobile phone applications to these hard-to-reach communities (Ericsson, 2008). In

the Philippines, the leading telecommunications company and mobile operator, Smart Communications, is a key player in the local mHealth market. Smart Communications launched SHINE, Secured Health Information Network and Exchange, an integrated health information system that connects different stakeholders. The company also worked with the government to provide an SMS service that delivered health information to its users (Handford, 2012). Health as a commodity enables the networks of mobile profiteering, catalyzed through state-based initiatives and public–private partnerships. The onus of delivery of health is privatized, having been converted into a new market opportunity, while simultaneously pushing new markets for private capital in the mobile technology sector.

The examples presented here are a small slice of the mHealth technology that is available on the market today. mHealth applications are diverse in their functionalities; while some apps leverage on relatively simple features of the mobile phone (i.e., SMS and voice call functions), other companies are using cutting-edge technology to meet the health needs of users. For instance, Samsung's S Health app enables users to perform a whole range of activities, including monitoring one's heart rate, with the potential to connect to medical devices (Comstock, 2014). Such mHealth apps that monitor and store data raise important concerns regarding data security and privacy of patient's health information with the advent of mHealth technologies. Given that one of the common goals in the industry is the creation of an ecosystem that integrates mHealth with formal health systems in each country, the role of the state in establishing laws and policies protecting patients' right to data privacy is imperative (Malvey & Slovensky, 2014). This includes regulations on which data are collected, how they are stored and transferred, and who has access. According to a report by the mHealth Alliance (2013), a possible regulatory framework must include (1) informed consent and choice to opt-in; (2) data minimization to reduce the risk of loss of privacy; (3) patients' accessibility to personal data; (4) laws on data security; (5) limit transfer of data across jurisdictions; and (6) enforcement of laws and regulations. More importantly, critical conversations ought to attend to the role of the state in enabling the movement of capital and profits in health across Asia.

6.6 Conclusion

Articulations of mHealth in Asia are situated within the logics of health tied to frameworks of global capital flows. In the conceptualizations of mHealth in Asia, health emerges as a market-based commodity to be delivered through privatized mobile technologies. The movement of health from the centers of knowledge production to distant spaces in Asia through mobile technologies is constituted in the erasure of culture and community as sites of meaning making. Expert knowledge developed in networks of power is disseminated through mobile technologies

into hard-to-reach communities. Mobile technologies enable the reach of capital into subaltern spaces of Asia, premised on the delivery of the miracles of health and wellbeing. The ideology of mHealth is empirically empty, removed from the evidence of health effects of mobile technologies. The lack of empirical evidence translates into large claims about the possibilities unleashed by mobile health in Asia. The power ascribed to technology and its ability to uplift the “burden of the soul” is disengaged from empirically grounded studies that enable cause-effect claims. Moreover, the articulation of mobile health in Asia rests on the framing of community as resources for health delivery, at the same time, treating the notion of community as a monolith. Community emerges in narratives of mHealth in Asia as a monolithic receptacle of mHealth interventions, enabled by community health workers, catalyzed to deploy the mobile technologies of health. Moreover, the positioning of mHealth as solutions to problems of health inaccess drives the active role played by the state in enabling the commoditization of health into new markets for mobile technology corporations. CSR and public–private partnerships deliver new opportunities for expansion of privatized mobile companies, wrapped up in the age-old seductive appeal of technology as an instrument of development.

How can we then move towards democratizing technologies such as mHealth that can engage with communities in resourceful ways? CCA theorization begins by first unpacking development discourses embedded in the distribution of technologies, uncovering the ways in which top-down effects of technology are sold as enabling better health while at the same time commoditizing health to push market opportunities. Moving forward, the CCA pushes researchers to situate mHealth amidst local expressions of the relationships between structure and culture, foregrounding community agency through collective organizing and advocacy to challenge the neoliberal structures of healthcare. Thus, a CCA scholar interrogating mHealth and its applications might begin by asking local communities, what are the ways in which they face health injustices? By doing so, the researcher first begins by recognizing the agentic capacities of a community to articulate their structural limitations in accessing and achieving better healthcare systems, and in organizing their own mHealth interventions (agency), designed to account for their community and health needs. Cultural and structural articulations are located within the sites of technological interventions, described by those that can best represent their health concerns. Zapata (2016) for example, studies mobile phone and indigeneity using the CCA as a framework. She describes the various dialectics of mobile phone use, suggesting its role in complexifying indigeneity in the community, yet being extremely useful in coordinating community health issues. By making sense of how technology is mediated in cultural spaces in collaborative and dialogic ways, we move away from interventionist approaches of technology use, and instead, toward communizing spaces where communities can contest the meanings of technology and its uses, centering their own articulations of their relationship with technology. In recognizing the polemical in disenfranchised spaces, CCA theorizes the interdependent ways the meanings of technology use come to be located, reworking technology in community networks as sites for solidarity building and resisting neoliberal capital.

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