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Publication Date
2013

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Mobiles, Media, and the Agency of Indian Youth

by

Neha Kumar

A dissertation submitted in partial satisfaction of the
requirements for the degree of
Doctor of Philosophy

in

Information Management and Systems

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Professor Tapan S. Parikh, Chair
Professor Brian W. Carver
Professor Abigail De Kosnik

Fall 2013

Mobiles, Media, and the Agency of Indian Youth

Abstract

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Technologies have been and are being designed to address varied human needs. Of these, the need for physical and economic well-being is typically considered to trump the need for culture, leisure, fun, and entertainment. Research initiatives in the field of Information and Communication Technology and Development (ICTD) have been in motion to address agricultural, educational, and health care needs, among others. The need for entertainment is central even in the lives of the 'have-less', my dissertation affirms. Affordable new media technologies play a critical role towards the procurement of entertainment content and the resulting production of culture. Individuals quickly learn to navigate their way around technology, also paving the way for development-friendly outcomes. It is this phenomenon that my dissertation analyzes, as it studies individual agency in the intertwining of culture (society) and new media (technology) within the larger discourse of development.

I use ethnographic methods to investigate the leisure-driven appropriation of the mobile phone by youth from socioeconomically disadvantaged backgrounds in rural, small-town, and urban India. I first analyze the influx of new media and its resulting impact on folk music practices in rural Madhya Pradesh and Rajasthan. Shifting focus to the motivations that drive youth towards mobile consumption of folk and popular media, I examine the unique material affordances of new media technologies and their influence on emerging practices. I use the Actor-Network Theory (ANT) lens to draw particular attention to the notion of agency, both human and material, as I investigate the pirate media actor-network responsible for the widespread dissemination of digital media *and* technical skills. I then focus on the agency of urban Indian youth that leads them to build further on these skills as they negotiate various linguistic, social, and technological hurdles for engagement with social media towards a new, improved identity for themselves.

To the Kabir in each one of us.

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Acknowledgments

This dissertation is the product of a dream that was nurtured with faith, love, and perseverance. As a naïve young Berkeley undergraduate, I believed that a Ph.D. at Berkeley was the best thing that could happen to me. Not so young and naïve anymore, my thoughts are about the same. This university has been an honor, a privilege, a blessing to attend. The years spent within these hallowed walls have bestowed upon me the learning that is one of my life's greatest gifts. Go Bears!

The one person without whom this Ph.D. really would not have been is Tapan Parikh. It is rare to be blessed with an advisor one can admire not only for his incredible intellect and the uncommonest common sense, but also for his genuine passion for changing the world. He has been the perfect Ph.D. advisor - supportive, kind, and just chill. I am ever in awe that he can nap, text, email, but still be fully present to what goes on in the classroom *and* offer a unique and insightful perspective at just the right moment. Kabir's words for his *guru* come to mind: *Suntā hai guru gyāni*, which translates to *The guru, the wise one, listens.*

My luck with professors goes further. My meetings with Gail have been few, but each one has been memorable and impactful, not least for her infectious enthusiasm. Her belief in my project came at a crucial time, for which I will always be grateful. Likewise, Brian's unfailing support has played a critical role, coming through for me at key don't-wanna-go-there moments. I have always felt encouraged and supported by both. Ingrid, who trained my engineer mind to conduct qualitative research, gave me valuable feedback on my work early on,and saw me through my qualifying exams. I am thankful, also, to other faculty at the I School who have offered guidance and feedback over the years, most notably Anno, Coye, Jenna, and John. My professors at Stanford - Roy, Shelley, and Balaji - have been a strong and inspiring influence in this journey as well.

It was in the field in India where my Ph.D. really took place. The relationships I was fortunate to forge there determined the course of my research. Thanks to Tapan, I met Shabnam. And thanks to Shabnam, the Ph.D. unraveled. Thank you Shabnam, for introducing me to Prahaladji and his loving family, the many other wonderful Kabir singers, and the vast expanse of the Kabir Project. Most of all, thank you for the music. In ways big and small, my life has been changed by the times spent with Gopal, Ravi, Linda, Arvind, Smriti, Vishakha, Vipul, Tisha, Deepa, Sudebi, Tahireh, Shilpi, Palash, and Deepti. A special thank you to Gopal's mother who fed me and cared for me, leaving me with fond remembrances of Bikaner. Thank you, Aaditeshwar and Zahir, for introducing me to *Gurgaon ki Awaaz* and *Radio Bundelkhand*, and helping me learn about community radio. And thank you, Aditi, for your wonderful company on our memorable Kabir Yatra together. To the hundred and more interviewees who opened their doors and hearts to me so that this dissertation could unfold, I will remain forever in debt.

the better school, Stanford made up for itself by giving me loving, supportive friends who I know have got my back. Thank you Sri, Bhaskara, Dinesh, Nikhil, Casia, Nesra, Amri, Anu, Aka, Anand, Madhu, Meng, Madhura, Gaurav, Pranita, Priyanka, Rahul, Namita, Nishant, and Venkat. Thank you also to the friends-in-law I inherited over these years - Jayanth, Celeste, Nikhil, Deepak, Supriya, Sudeshna, Dileep, Garima, Navneet, Chaitra, Rishi, Madhup, Neha, Amit, Sara, Ashmi, Mukul, Rakhi, Anupam, Ankit, Mukta, Amitava Da, and Semanti Di. And for my anchors - Aditi and Poorvi - you are such rockstars.

I have been gifted with a large and loving family, both in the U.S. and in India. They warm my heart, and are a reminder that I am never alone. Mahesh Bhaiya, thank you for being a solid, inspiring presence. Aanya and Aniket, my super-awesome niece and nephew, you give me faith in the promise of tomorrow. To my beautiful Anju Masi, thank you for being my mom-in-residence. To the extended Bay Area family - thank you for your kindness, laughter, and memorable family dinners. I consider myself fortunate to have married into the Das family, from whom I receive warmth and encouragement in abundance. And I am especially grateful to my mother-in-law, the lovely, gentle soul who stands by me through everything.

There are four incredible pillars in my life to whom I dedicate this Ph.D. To Nidhi, you personify integrity and excellence. I have always looked up to you and I always will. To Mummy and Papa, you give me so much love that it lights up my sky[1]. As Lord Ganesha said, *you* are my world. And to Abhishek, you are my rock, my bottomless well of inspiration, and the keeper of my soul. With you by my side, I am always a winner.

---

[1] I refer here to Hafiz's poem: 'Even after all this time, the sun never says to the earth, "You owe me." / Look what happens with a love like that. / It lights the whole sky.'

Chapter 1

Introduction

> "Human beings are, and always have been, diversely motivated beings. We act
> instrumentally, but also noninstrumentally. We act for material gain, but also
> for psychological well-being and gratification, and for social connectedness."
> (Benkler, 2006)

By the mid 1900s, the telephone had become an integral part of the daily lives of billions
of people around the world, and a well-established medium for communicating with family and friends, as well as conducting business transactions. Large regions in the developing
world, however, remained deprived of its benefits until the twenty-first century brought along
its mobile counterpart. As the mobile phone became more inexpensive, it traveled gradually
but steadily from the developed world to developing regions, from cities to villages, and
from rich households to the poorer ones. The *mobile typhoon* impacted large populations,
bringing with it not only new means of communication and staying in touch, but a new
means of engaging with the world. In the resource-challenged, poorer communities in India,
the economics of the mobile phone led to the emergence of a mobile culture of procuring,
consuming, sharing, and disseminating media in ways that had not been possible before. It
is these media practices that form the focus of this dissertation.

Existing scholarship on new media practices in the global south is limited. Traditionally,
new media research has focused on predominantly white regions and contexts of use. This
focus owes itself in large part to the sheer economics of new media technologies until the recent past. Now that these technologies are becoming increasingly affordable, their uptake in
the global south has not only risen substantially, but has brought with it innovative practices
that one, are starkly different from those that developed in the West, and two, highlight the
importance of social factors in determining the trajectory of adoption and use.

Taking technology to the global south has been on the agenda of several governments,
aid agencies, as well as research establishments in the West, giving rise to the development
discourse that began in the post-World War II era and continues to this day. There is a colo-

nial flavor to several of these efforts, with a strong desire to fuel economic growth in these regions with technological advancements made in the developed world (Dourish & Mainwaring, 2012). Before we as researchers and practitioners from the global north decide on whether and how to address the 'problems' of the developing world using our technologies, there is a need first to understand existing technological practices. This dissertation is an effort in that direction. If we are indeed to develop the world as a whole, let us first develop our understanding of that world.

Conversations about development are meaningless when they leave out either one of technology or society. My research seeks to balance the technologically deterministic and socially deterministic views by asserting that there is a continuous interplay between humans and technology. I find that technology offers society particular *potentialities and constraints* (Dourish & Mazmanian, 2011) which shape the ways in which individuals adopt these technologies for their social needs. These, in turn, have an impact on the technologies and technological practices that are adopted by society.

Technologies have been and are being designed to address varied human needs. Of these, the need for physical and economic well-being is typically considered to trump the need for culture, leisure, fun, and entertainment. Several research initiatives in the field of Information and Communication Technology and Development (ICTD) have been in motion to address agricultural, educational, and financial needs, among others (discussed below). While rational behavior would hold otherwise, the need for entertainment is central even in the lives of the 'have-less', as my research affirms. Here, new media technologies play a critical role in the procurement of entertainment content and the resulting production of culture. Individuals learn to navigate their way around technology and discover their own agency, also paving the way for their own development. It is this process that my dissertation documents, as it explores individual agency in the intertwining of culture (society) and new media (technology) within the larger discourse of development.

In this chapter, I first introduce the reader to the four prime constructs that comprise this dissertation: culture, technology, agency, and development. Next, I describe the research design and the methods I used. Finally, I provide an outline of the remaining chapters.

1.1 Culture

This dissertation begins by taking a close look at culture as depicted by folk music practices in rural and small-town India. Folk music has been practiced for generations, particularly in rural parts of the country, aiming to bring about a common understanding, awareness, and practice among its listeners. These music forms are rich and diverse, varying from region to region across the vast Indian landscape, and serving several different purposes in the lives of the local residents. In the quote below, Greene (2001) captures a vivid picture

of this ubiquity from his study of village music in the state of Tamil Nadu. His observations of how this music is performed and partaken of in varying contexts of rural life hold for several other parts of India as well, and certainly the sites I explored:

> "... villagers sing folksongs on numerous occasions and for many purposes. Women and men working in the fields sing worksongs to take their minds off of their arduous labor. At the end of the day, men gather at tea shops and sing epic ballads or other songs for entertainment. Singing is part of personal practices of Hindu devotion in the early morning, and most villagers know and can sing folksongs of devotion to each of the important deities in the village. ... Villagers feel free to change the words to reflect the concerns of their particular village, local village deities, and also personal concerns. The sphere of folksong performance is a very dynamic, creative one, as villagers continuously rearrange verse elements, alter melodies and change the words so that they speak to village or family life."

The forms of folk music practiced in India are numerous, as is evident from Manuel's North Indian study (1993). My research studies folk music communities in Madhya Pradesh and Rajasthan where the 15$^{\text{th}}$ century North Indian mystical poet Kabir has been sung for generations. In these parts, singing and listening to Kabir's poetry is a popular spiritual practice for both Hindus and Muslims. I learned from my research that regional politics contribute greatly to Kabir's popularity. Through his poetry, Kabir argued against discrimination of individuals based on caste and religion. Especially for lower-caste communities and religious minorities, Kabir's message is uplifting and inspiring. It becomes even more relevant for those who are subject to social ostracism and frequently prevented from entering religious shrines by the higher castes (Virmani, 2008; Hess, 2014).

Folk culture is more than just an avenue for entertainment. For instance, Lent's study (1996) on folk media in the developing world shows that it serves as a counter-force to the constant stream of urban media into the rural domain, empowering and increasing the voice of marginalized communities. Other studies in this area also show that folk media finds frequent use in mass awareness and publicity campaigns (Grandin, 1989; Mukhopadhyay, 2008). Local fairs, puppet shows, street theatre, songs and ballads are used in support of local development schemes for generating health and political awareness (Kumar, 2006; Obregón et al., 2009; Panford, 2001), also playing a key role towards increasing social awareness on important developmental issues. This link between culture and development will be revisited several times in this dissertation. According to a Food and Agricultural Organization (FAO) study on traditional folk media for rural development:

> "If we are to properly communicate with rural communities, we must learn more about and better understand how to channel our development work through those communities' traditional communication channels." (Ng'ombe, 2000)

Chapter 2 presents ethnographic research on folk music practices in rural and small-town Indian sites that have traditionally been rich in Kabir folk culture. I present these practices

as systems of activities, collective ways of doing certain things, or systems of "doings and sayings" (Schatzki, 1996). A practice maintains continuity as it allows for the sustenance of relationships between patterns of interactions, material resources, and shared systems of meaning (Takhteyev, 2012). In the case of Kabir folk traditions, this chapter notes the interactions between the artists, listeners, and retail shops, documents the nature of media use, and uncovers the meanings that the different individuals derive from the practice. Understanding the folk music practice is essential in order to understand the role played by the influx of new media technologies in this environment, discussed in the next section.

1.2 Technology

Before recording technology was available in rural India, folk music was performed and partaken of primarily in live concert settings. The trend towards new media adoption in rural India began with the widespread use of audio cassettes approximately 25 years ago, when most people were first able to listen to music at will. Manuel's study provides an empirical description of the rise of the audio cassette industry and associated musical developments (Manuel, 1993). He looks at the cassette as a "grassroots-based, decentralized, pluralistic, 'democratic-participant' micro-medium" that also has a broader and positive impact on "autonomy, freedom and national integrity." He also discusses the impact of the advent of cassette technology on the rural listenership of film music:

> "In the 1970s, film music, whose dominance might previously have been assumed to indicate its exclusive popularity - fell from roughly 90 per cent of the recorded music market to around 40 per cent. A vast and diverse body of regional, pan-regional, devotional and secular genres arose as new, mass-mediated popular musics." (Manuel, 1993:15)

In the last 5-10 years, new media technologies such as CDs, DVDs, and mobile phones have sent cassettes far into the past, gaining significant popularity across demographics, offering people in villages a personal device that they can use to consume media as per their choice. The mobile phone has emerged a winner in particular, and in recent years, extensive research efforts have been made in the domain of ICTD, coming from both interpretivist and interventionist traditions (Burrell & Toyama, 2009), to examine the uses and the potential of the mobile phone.

From the interventionist perspective, recent research initiatives have investigated how the introduction of Information and Communication Technology (ICT) and ICT innovations have impacted (or could potentially impact) the domains of agriculture, education, and health care, among others. For instance, Patel et al. (2010) and Gandhi et al. (2009) were among the first to study the potential of audio and video technologies, respectively, for providing farmers in rural India with timely and relevant agricultural advice. Vashishtha et al. (2012) have invested great effort into developing and deploying Interactive Voice Response

(IVR) systems. Pawar et al. (2007) studied the sharing of computer resources for primary school children and Kam et al. (2009) explored the potential of mobile-based learning for less privileged children from rural India. More recently, Mathur et al. (2011) and Cross et al. (2012; 2013) have proposed various tools for teachers to use in the classroom. On the health care front, Ramachandran et al. (2010) have studied how mobile messages can promote maternal health in rural India. Several recent initiatives also examine how mobile technology can be used for data entry and storage (Brunette et al., 2012), diagnostics (Dell et al., 2013), and monitoring (Chaudhri et al., 2012). This is only a minuscule sampling of ICTD research interventions. The field is growing, and researchers are continually devising innovative means of productively utilizing limited resources.

There is also a host of ethnographic and/or interpretive research conducted in developing countries that examines the adoption and use of new media, particularly the now-ubiquitous mobile phone (Horst & Miller, 2006; Miller & Slater, 2000), and emphasizes the interpretative flexibility of technology. Although the focus of developing world research on technology adoption and use has traditionally been on instrumental uses of this technology, there exists literature that examines the non-instrumental uses as well. Kolko & Putnam (2009) have written about the benefits of gaming and how it promotes digital literacy. Rangaswamy & Cutrell (2012) presented an anthropological perspective on the mobile Internet practices of low-income youth in India. Smyth et al. (2010) have examined mobile adoption for consumption and sharing of entertainment media. Arora & Rangaswamy (2013) further stress the importance of research on leisure-driven use of new media technologies in the developing world. My research aligns with and extends this body of work by highlighting - using ethnographic findings - how leisure-driven use of the mobile phone may result in development-friendly outcomes.

What is it about the mobile phone, however, that makes it so unique, particularly in the furthest reaches of rural India? Adopting the lens of materiality, Chapter 3 takes a closer look at the mobile device, analyzing the affordances that have made it ubiquitous in the realm of consumption and dissemination of entertainment media. I focus on low-resource environments and youth, who are the lead adopters of these new, inexpensive mobile phones, to describe a vast, growing mobile media consumption culture in India.

1.3   Agency

There are different ways in which to view the sociotechnical sphere. To borrow from Orlikowski's (2009) categorization, there are four ways in which the interactions between humans and technologies can be seen. In the first, technology is an *'absent presence'*, unaccounted for. The second view is of technological determinism, where technology is seen as a driver of change. In the third perspective, technology is a mere product of human behavior, "contextually and historically contingent" (Orlikowski, 2009). The fourth perspective, that

of *entanglement in practice*, balances the second and third perspectives and places humans and technologies on neutral ground, viewing each in relation to the other. It is also the perspective I choose to take in this dissertation.

Certainly technologies play an instrumental role in enabling particular activities, as demonstrated in Chapter 3. At the same time, the subjects of my research are not passive receivers of technological innovations either, although they may be operating within tight socioeconomic constraints. There is an intricate interplay between my human participants and the technologies I examine that I bring to light by uncovering the agency of both. By human agency, I refer to the ability of individuals to create and realize their personal goals that may or may not align with traditional notions of personal or economic well-being. I view human agency as occurring in response to material agency, by which I refer to the ability of non-human entities to act outside of human intervention. In my observations of the sociotechnical sphere, I recognize that the two are inextricably linked and must be studied in relation to one another.

To analyze the conversations between humans and technologies that take place within the context of my research, it is not essential to ascribe agency to both or even to either one. However, ascribing agency provides me with a lens to make sense of the dynamic interactions between the social and the technical. As I discuss in Chapter 4, using the Actor-Network Theory (ANT) framework originally proposed by Callon, Latour, and Law (Law, 2009), the media ecology I study is an 'entanglement in practice'. While on the one hand, mobile phones are able to do more and more for my research participants (play music, download songs, access Facebook, etc.), on the other, these individuals too are progressively able to extract more and more of these uses from their mobiles. On Latour's advice, my effort in this dissertation has been to 'follow the actors' (Latour, 2005:12) so that I may learn from them how their collective existence has evolved and continues to evolve over time, based on the methods they use to fit into or stray away from their heterogeneous network.

Ascribing agency to the human actors, the technology users that I study, is a significant contribution of this dissertation. This agency becomes relevant in light of dominant narratives of 'development' and recently emerging claims of colonial impulses finding their way into technological advancement (Dourish & Mainwaring, 2012). In this context, where individuals have perpetually been viewed as lacking agency and subjected to the limiting top-down perspectives of governments, non-profits, and aid organizations, ascribing agency to humans means to allow for a world where the poor too have a voice, and the ability to make a change, at the least to their lives and within their environments. Here I build on the work of Ratan & Bailur (2007) to further their conversation on welfare and agency in the realm of development, which I discuss next.

1.4   Development

This dissertation has its roots in the still-emerging field of Information and Communication Technology and Development (ICTD) research. It is essential to clarify first what is meant here by 'development'. The development discourse began with Harry Truman's post-WWII inaugural address as president of the United States on January 20, 1949, with his announcement of a 'fair deal' for the world. This entailed, among other things, an appeal to the U.S. and the West to solve the problems of the 'underdeveloped' areas of the globe. Truman was a believer in capitalism, science, and technology, and that these alone would allow the American dream of peace and abundance to extend to the impoverished others across the planet. In accordance with his vision, a group of experts at the United Nations put forth policies "for the economic development of underdeveloped countries" thus:

> "Ancient philosophies have to be scrapped; old social institutions have to disintegrate; bonds of cast, creed and race have to burst; and large numbers of persons who cannot keep up with progress have to have their expectations of a comfortable life frustrated." (in Escobar, 1995:4)

Post-development critiques emerged as a response to the perceived failures of the development era (Lal, 1985; Escobar, 1995) and Participatory Development came to be recognized as a response to accusations against and a healthy alternative to development organizations and governments pursuing high modernist agendas that were disconnected from the lives of the masses (Scott, 1998). Towards the end of the 1990s, the information technology revolution brought a new set of tools to the hands of development practitioners. The focus shifted to the participation of the poor and the provision of relevant information on markets, health, livelihoods, which were previously considered to be in short supply (Nelson & Wright, 1995). This information was intended to empower the poor so they could be responsible for their own development. Several impoverished communities in India swiftly became a target for experiments and projects that tried to provide information on market prices, government schemes and provisions, agricultural practices, and other livelihood-related activities. The ITC e-Choupal (Brewer et al., 2005) is one such example. However, did this information empower the rows of villagers who came and made use of this technology? Did the use of kiosks mean 'adoption'? Was it 'development'? And from whose perspective?

This dissertation seeks to argue for newer and more complete ways of viewing 'development' in the context of technologies that are being designed to bring growth and change. This is the focus of Chapter 6, which looks more carefully at individuals and how they approach their interactions with information technology and media, seeking to improve their lives in various ways. Instead of discussing the impact of technology projects that aim to bring about 'development', I draw attention to the *agency* of youth from low-income backgrounds and their self-motivated technology practices. Thus far, the dominant narratives of development presented above have approached the idea of agency in two different ways.

On the one hand, post-developmentalists (Escobar, 2010) stress the importance of allowing communities to manage their resources and bring about their own development, while on the other, those who support market-led development propose the empowerment of individuals with the provision of tools such as information and credit so that they may make choices in their own best interests (Prahalad, 2005). Both approaches have their problems, however. In the former case, agency is denied to those individuals who are marginalized by social hierarchies at the community level - particularly in the case of heavily caste- and class-based societies such as the ones I examine. In the latter, infrastructural inadequacies and issues of power and inequality are ignored, as is the importance of people's institutions, skill-building, and public investment that enable people to make choices in the first place (Ratan & Bailur, 2007). This dissertation approaches the question of agency differently, by examining the ways in which people from rural and/or low-income backgrounds exercise agency that are not recognized by these dominant narratives. Instead of looking at these individuals as the targets of development or technology projects that are conceived and implemented by external groups of individuals - researchers or governing bodies, I look at them as individuals capable and willing in bringing about change.

1.5 Motivations

In the early stages of my doctoral research, I was wearing a computer scientist's hat, trying in earnest to discern ways in which I could design and build a technological solution to address *real* problems of the developing world poor. In one of my earlier visits to the field, however, I learned an important lesson - one that perhaps a multitude of researchers had learned before me, but it hit me hard. This was in the district of Banswara in Rajasthan (India), in January 2009. I was visiting a micro-finance non-profit that worked in a remote rural area to set up and operate women's self-help groups. I interviewed the organization head as well as other dedicated volunteers, visited several villages and met with the self-help groups there, asked probing questions to get at their 'problems', and this is what I found: they had none. At least, they believed that they had none. In that moment, as I sat on the dirt floor outside a few huts, on a sunny late-January afternoon in the neighborhood of corn fields, cows, and goats, and in a village with no electricity, I realized that I was there not for *them* as I had thus far believed. I was there for *me*. This was the first and most important lesson I learned in my Ph.D. Therein I redefined my research objectives - to step out of my shoes and into those of the individuals I was hoping to help, to understand their world before I tried to fit them into mine.

I embarked upon my first summer of research without a research plan. It was an exploratory summer spent in the creative environs of the Srishti School of Art, Design and Technology in Bangalore (India). Shabnam Virmani, a renowned social activist-turned-documentary film-maker hosted me generously for three months, allowing me to shadow her into the interiors of rural Madhya Pradesh and Rajasthan, where she worked with local folk

musicians. The thread that bound these musicians to Shabnam and to me was of Kabir's six-hundred years old spiritual legacy that they had carried faithfully along the years. I listened and sang, took notes and photographed, interviewed and immersed - all with the conviction that the research questions I was looking for would spring unexpectedly upon me and make themselves heard.

Figure 1.1: Alternating rows of whites (the men) and color (the women) as crowds gather to attend a concert in Malwa. Photo: Hari Adivarekar.

They did. It was the 6th of July, 2009. Prahaladji - one of few nationally acclaimed folk artists and also our host in Luniyakhedi (a village in Malwa) - was hosting the 24-hour long Guru Purnima festivities as he did every year. The morning was warm, and as the day wore on, the heat became increasingly difficult to bear. It was the peak of summer and the rains were much awaited. Guests began to trickle in at around 3pm. The music system had been set up to play recent recordings of popular Kabir tunes. The stage was ready. The tents were set. A temporary kitchen had been erected, with humongous vessels, to provide dinner

to the visitors, who were coming from their village dwellings near and far. There was also the urban lot of us - not difficult to set apart from the otherwise largely rural audience. The colors were striking. Women, men, children. One could see them walking in a long, thin stream, down the dirt road that led to town. Prahaladji commanded the attention of all and sundry. Everyone sang, as did I - on stage, a Kabir bhajan, fully insecure that my unrehearsed voice could have done far greater justice to the song, but also aware that I was enough of a specimen for my audience that my lack of expertise would not make a dent to the fact that here I was - introduced as an *antararashtriya kalakaar* (international artist) who had come all the way from *Amreeka* (America) to sing among them. This was my formal introduction to the community, and symbolically, my introduction to my dissertation research as well. As I sat tentatively on stage, I looked around and found a large number of audience members with their arms outstretched, holding mobile phones. What were they doing with the phones, I wondered. I later discovered that this kind of bootlegging was commonplace. The recorders would listen to these recordings, and when - after repeat listens - these songs became old, they would be replaced - in a different concert, by different artist renditions.

Figure 1.2: Capturing videos of the concert on their mobiles. Photo: Hari Adivarekar.

The sociotechnical landscape that lay before my eyes drew me in. There I was representing the western world of technology and innovation. My task was to observe, to immerse in local cultural practices, to understand the role that technology played in these lives. My mind was blown. The extent of technological penetration, which went beyond the mere use of the mobile phone for making and receiving calls, was more than I had imagined, given the skill level I had associated with these 'under-educated', 'under-represented' users, as they are commonly labeled. I directed my attention to local media practices, following the process of media creation, production, consumption and dissemination. In the following section, I describe how I conducted my research.

1.6   Ethnography

Ethnographic research entails continual decision-making and it is these decisions, big and small, that are responsible for the research documented in this dissertation. The decisions, in turn, are heavily dependent on the decision-maker and the subjectivities s/he brings to the research. According to Peshkin:

> "...researchers should systematically seek their subjectivity, not retrospectively when the data have been collected and the analysis is complete, but while their research is actively in progress." (Peshkin, 1988)

Researchers cannot get rid of their subjectivities, but by paying attention to them, they can become aware of how these shape their processes of inquiry. At the beginning of my dissertation research, I was uncomfortable about my love for music. Not wanting my bias to come in the way of conducting 'objective research', I assured Shabnam, then my research mentor, that I would set aside this attachment as I conducted my fieldwork. She stopped me short immediately saying that my love for music was in fact the reason she had wanted to work with me, asserting that it would be impossible for me to immerse in the field if I could not connect with the music. While at that point her response merely served to put me at ease, I later realized the import of her words. I could not have separated my researcher self from my musical self if I tried, but accepting them as inseparable enabled a more authentic and meaningful research exploration.

Just as Peshkin conducted a subjectivity audit for himself, so did I. My Indian roots drew me to India. My love for music and technology brought me to research local music forms and new media technologies. In fact, I was able to use my singing talents to create connections and openings for research. Being a Hindi-speaker, I was drawn to regions where I could understand the culture and speak fluently to the people. Being city-bred, rural India held a charm I was inclined to explore. Being a non-believer in caste politics, I felt sympathetic towards those whose castes denied them certain social privileges. My background thus brought me to make some decisions automatically. Other decisions were made for me. For instance, being a woman allowed me access to certain settings and conversations but not

others. Visiting from the U.S. afforded me special privileges that urban Indian visitors did not enjoy. None of these factors had direct impact on the rigor of my methodology, but each of them impacted my findings to create a unique research trajectory. According to Van Maanen (2011), ethnographers use 'realist tales' to present accounts that simply present what happened, or 'confessional tales' to present accounts that focus on the observer at least as much as on the observed. The latter is the approach I use, realizing that everything I observe goes through the filter that is me, the observer, who also controls what must be observed or interpreted. I list in this section the decisions my 'subjective-I' (Peshkin, 1988) made and the research rituals I performed to complete my ethnography. This includes the places I chose to explore, the people I sought to interact with, and the practices I studied. My dissertation is a synthesis of these decisions.

Places

Traditional ethnographies have focused on a single geographic site - one village, one town, one city. My dissertation diverges from this model in line with Marcus's (1995) and Burrell's (2009) notions of a multi-sited ethnography. As music and media travel in an increasingly digital age, so did I. To study the different contexts of mobile media practices, I explored rural, small-town, and urban sites, observing the differences between them or occasionally the lack thereof, as Marcus suggests:

> "For ethnographers interested in contemporary local changes in culture and society, single-sited research can no longer be easily located in a world system perspective." (Marcus, 1995)

He goes on to explain that multi-sited ethnographies involve the studies of different contexts - one can choose to "follow the people", "follow the thing", "follow the metaphor", and so on. Within this suggested framework, it is both the thing and the people that I follow - the new media content that is generated, distributed, and shared, and the people responsible for these practices. In the case of DVDs and CDs, this includes physical media, while in the case of the mobile phone, I focus on the digital content - the ways in which it is produced, sold, procured, shared, or replaced. I record here the sites that I journeyed through, in my attempt to make sense of emerging music, mobile, and media practices.

My first site was the Bangalore home of the Kabir Project - the Srishti School of Art, Design, and Technology. I immersed myself in hundreds of hours of raw video footage stored here to understand different communities in Madhya Pradesh, Rajasthan, Gujarat, and Pakistan, where 15th century Kabir still had a tremendous following due to the preservation of folk culture through the generations. These videos showed me how ingrained this folk culture was within the communities, and how it tied them together amidst other social factors such as caste and class that held them apart. I then traveled to several of these field sites and had the opportunity to validate what I had seen in the videos. Folk music wasn't just

a source of entertainment in these communities, it was a way of life. As a result of my observations in this initial phase of research, my next set of travels became more targeted. Having explored several Kabir sites, I decided to focus on Malwa and Bikaner. Malwa is a region in Madhya Pradesh where the major cities of Ujjain, Indore, and Dewas are located. The Bikaner district includes the city of Bikaner and also the neighboring villages such as Pugal, where Kabir maintains immense popularity. The decision to focus on these sites was motivated largely by the local music and media practices I witnessed, but was also motivated by access. Here I was able to foster relationships that allowed me to gain access to homes, business settings, the young, and the old.

In the process of observing local cultural practices, I stumbled upon a mobile media culture that had only just begun to emerge but was fast catching on. A natural offshoot of this culture was widespread media piracy and my research came to focus on the dynamics of the informal economy that dealt in the uninhibited dissemination of pirated media. Having looked at an informal ad hoc culture of piracy in the locales of Malwa and Bikaner, I turned my focus to the urban markets of New Delhi, Hyderabad, and Bangalore, where media piracy was much more rampant and systemic. Visiting the pirate hubs of Ghaffar Market and Palika Bazaar was challenging in terms of access, and it took several attempts before I could identify interview participants who trusted that I was a student and would not have them put in jail for their illegal practices. This process was relatively easier in the smaller markets of Malwa and Bikaner where the legal implications were neither observed nor clearly understood.

This dissertation draws upon my journey through different parts of India - some remote, some less remote - as I sought a deeper understanding of the interaction between new media technologies and individuals from socioeconomically challenged backgrounds. Having entered the field with the mistaken notion that technology was a luxury the 'poor' could neither afford nor make sense of, my research made me aware of the agency of these poor and the extents they were willing to travel to make technology work. It is this agency that I foreground in my dissertation, and I now describe the people whose agency I am referring to.

People

The people I interviewed and observed comprised a sample that was in part a 'theoretical sample' and in part a 'snowball sample'. The aim of a theoretical sample, where the researcher seeks particular kinds of participants who will help to challenge preliminary assumptions, is to increase the diversity of the sample to compensate for its small size (Glaser & Strauss, 2012). It is typical to build this sample by asking interviewees to recommend additional individuals who fit a particular criteria and could be interviewed (a snowball sampling approach). It was important for me to investigate diverse perspectives of media, which I obtained by combining the theoretical sample with a snowball sample.

Figure 1.3: This image of the one-stop digital shop, captured on my visit to rural Madhya Pradesh, highlights the 'convergence' of varied new media technologies.

I conducted over one hundred interviews in the course of my dissertation research. While I researched folk culture (documented in Chapter 2), I interviewed urban and rural folk music enthusiasts, several musicians, erstwhile recording studio owners, and music shops that served the local clientele. When I shifted my focus to mobile technology and its affordances (Chapter 3), I interviewed several youth as well, for these were the lead adopters of mobile phones for media consumption. As I examined pirate media networks (Chapter 4), I also included in my purview local law-enforcement authorities - both the police and the anti-piracy Indian Music Industry. My study of social networking practices (Chapter 5) focused exclusively on urban youth.

My language skills did not pose a significant challenge as I conducted my research. Being a native speaker of Hindi, I found it straightforward to conduct interviews without the aid of a language interpreter. More than my language skills, however, it was an understanding of the Indian way of life that guided me through my research. I did not know the dialects that were spoken in Malwa or in Pugal, but I was able to alter my Hindi to be conveniently understood. In Hyderabad, my interviewees were Muslims who spoke and understood Urdu, so that I was able to converse seamlessly in Hindi. In Bangalore, I used a mix of English and Hindi to get by. Here, the migrant workers spoke Hindi if they were from the North as they typically were, or if they were from Bangladesh, they spoke Urdu. In the shops, the owners spoke broken English or Hindi to cater to the increasingly diverse Bangalore crowds.

There were, however, other aspects that needed translation. Interviewees who were unused to engaging with tall, educated, city-bred women were challenging to interact with. Some pretended not to hear me, others laughed at me or asked brash questions. I was repeatedly asked if I was married, whether I had children, what my husband did, whether I was traveling with my father or husband, which caste I belonged to, and whether I was from a backward caste because I dared to reject the authority of the Indian caste system. I was frequently considered spy, policewoman, journalist, film or recording industry representative, mobile business competitor, although I began every conversation with explaining that I was a researcher and a student. On a few occasions, I was also accused of lying because no Ph.D. student could possibly be interested in asking the questions I was asking. Becoming a good ethnographer meant cultivating the skill to address these awkward encounters.

Practices

In the process of visiting different sites and interviewing numerous individuals, I observed various cultural, technological, economic, and social practices. My research began with spending several days in the homes of folk musicians and their families, traveling with them to attend live performances in nearby towns and cities, also singing with them on occasion. I participated in multiple *satsangs* (Kumar & Parikh, 2010) where a host of individuals would gather in order to glean spiritual lessons from Kabir's poetry that had been set to music. I saw apprenticeship at play in the guidance being offered by older artists to the younger ones. I too became an apprentice when I could to afford myself a deeper understanding of the folk culture.

When I shifted my focus to the influx of new media, I began to observe the technical practices of recording live music and sharing digital media. I 'hung out' at mobile shops for hours to become familiar with the interactions of shop owners and assistants with computers and mobile devices. Occasionally I even sat at the counter in the vain hope that I might be mistaken for the shopkeeper. I inquired into the relentless pirating of all versions of local and film media that were accessible. Whether in rural, small town, or urban India, these

shops were always a hub of activity. In Mobile Communications, one such shop that I visited in Jor Bagh (New Delhi) during my fieldwork, I asked the shopkeeper about his business practice and how it had evolved over the years. He was confident that he had picked the right business to invest in, given the fast penetrating mobile culture:

> "In today's age, the one thing we spend all our time with is our mobile phone - not friends, not family. We eat with it, we drink with it, it stays with us everywhere, even while we sleep. This is the best business to be in."

Towards the end of my dissertation research, I turned my focus to the social networking practices of youth. I observed the online activities of my participants and interviewed them about their engagement with various social media, and the benefits they derived from it. Whether it was game play, chatting with strangers, or coordinating with local friends, I found that they were deeply absorbed regardless of their educational backgrounds or skill levels.

The chapters in this dissertation each take on a distinct lens to observe the individual's role in the production of an emerging mobile culture through the use of new media technologies. The next section offers an outline of these chapters.

1.7 Outline

The remainder of this dissertation consists of four chapters and a conclusion. By discussing the interplay between humans and new media technologies I observed, I show that the social and technical constantly act on and are shaped by each other. The desire for cultural production and entertainment media pushes individuals from resource-poor backgrounds towards greater technology adoption and digital expertise. From here, it is the agency of these socioeconomically disadvantaged individuals that brings them to master particular technical skills and distribute these across their network of strong and weak ties. I argue that there are developmental gains that take place in the process as various linguistic, social, and technical hurdles are overcome for greater engagement with technology and media.

Chapter 2 dives into my folk music findings, as I describe the practices of local artists and the influx of new media technologies in this realm. After first examining the various motivations that drive the listening and consumption of folk music in my field sites, I focus on the rapid growth of new media use and its impact on the production of folk culture. I also introduce the practices that will be examined for the rest of this dissertation, including piracy and mobile media sharing practices, and discuss the importance of music and media in the daily lives of people. Thus, in some ways, this chapter lays down the foundation for the ones to follow, by discussing the social arrangements that provide the 'tracks' along which technical knowledge can travel (Latour, 1987).

In Chapter 3, I draw attention to the material nature of technology, particularly the mobile phone - the most prevalent music playback device as revealed by my research. I highlight the affordances of this medium that shape the media practices of youth as well as the business practices surrounding the sale of this media. Using the analytic concept of materiality to focus on particular characteristics of the mobile phone, I study their impact on the users and patterns of use in the context of their emerging music practices. My aim is to tease out the ways in which specific material characteristics of technology can impact social practices.

Chapter 4 aims to combine the social and the technical with an Actor-Network Theory (ANT) lens. It describes the vast, growing mobile media consumption culture in India that relies on the ubiquity of informal socioeconomic practices for reproducing, sharing, and distributing pirated digital media. Here, my aim is to view and capture technology, with its diverse material properties as presented in Chapter 3, as it comes into being through engagement with the human world. I draw particular attention to the concept of agency, linked intimately with ANT, in an exploration of the roles that humans and technologies play in this exchange. As mentioned earlier, a discussion of agency features not only the agentive role that technology plays, but also the agency of the users I study, who come from historically impoverished socioeconomic backgrounds.

In Chapter 5, I complete the circle - moving my focus from the social to the technical and back to the social as I focus on the individual and his/her sense of self-empowerment as it derives from technologic interactions. At the time of this research, GPRS-enabled phones were becoming increasingly prevalent and mobile Internet vouchers much more affordable. Social networking was the rage, particularly in urban areas, presenting new and exciting opportunities for the youth to expand their horizons both personally and in their engagements with the known and unknown outside world. This chapter discusses their journey towards self-empowerment as they navigate this new technological terrain.

I end my dissertation with Chapter 6, which offers a conclusion of the themes covered thus far, highlighting the role of agency in the interplay between the social and the technical, and within the larger context of dominant development narratives.

Chapter 2

Folk Music Goes Digital

"Yes, there's now a McDonald's at my favorite market in Delhi, but around the corner is the shop that sells statues of Ganesh. Yes, there are cellphones and ATMs and Internet cafés but none has made a dent in the bedrock of Indian culture. These latest foreign intruders are no different from the Mughals or the British or any of the other interlopers who over the centuries tried to subdue the subcontinent. India always emerged victorious, not by repelling these invaders but by subsuming them." (Weiner, 2008:277)

India has long been popular as the land of snake-charmers, but it is now equally well recognized for its booming digital culture. Orthodox yet modern, oral yet digital, these cultures do not preclude one another. They exist side by side not *in spite of*, or *because*, just *with*. These apparent contradictions have assimilated themselves into the everyday for better or for worse. Weiner (2008:297-298) recalls that he was once told: "...if you want to know India, just stand on a street corner, any street corner, and spin around 360 degrees. You will see it all. The best and the worst of humanity. The ridiculous and the sublime. The profane and the profound." Indeed, overflowing garbage dumps and tall shiny buildings stand side by side, and state-of-the-art highways make their way around practically permanent urban slums. The contradictions are not true for the affluent metropolises alone. They are available for public viewing in the rural heartland as well. Here, electricity is a luxury yet every house has a television. Age-old practices of burning waste persist while plastic shampoo sachets permeate the villages. And mobile phones can be found playing loud folk music atop tube wells as farmers till their land.

This chapter and my dissertation begin with examining the process of subsumption that Weiner mentions in the context of folk music practices and a growing digital culture. Folk music has existed in India in numerous forms and for several generations. Manuel performed a well-cited study of regional music and the influx of audio cassettes in North India, focusing on Bhojpuri popular and folk music. My own research began by examining another strand of this rich and widespread folk culture - the practice of Kabir singers in Rajasthan

Figure 2.1: "Before snakes came pre-installed on mobile phones?" (W. Thies, personal communication, November 24, 2013). I took this photo in Malwa in July, 2009.

and Madhya Pradesh. Why Kabir, a 15th century poet? Serendipitous encounters (that I mention in the concluding chapter) led me to the music of Kabir, and drew me into the space that lay in the intersection of folk culture and new media. I discovered that the recent explosion of new media technologies (e.g. DVDs, CDs, mobile phones) in rural and urban India was changing how oral folk music had been performed, produced, distributed, shared, and archived. To understand the impact of these trends, I conducted a field study across four field sites in India that are rich in folk music traditions and activities. I went through a process of interviews, participant observations, focus group discussions, and content analysis with a varied group of stakeholders - including folk musicians, listeners, retailers, and radio show producers. My findings reveal that one, there is a diverse set of motivations for and perceived benefits from performing and listening to this folk music; two, the influx of new media technologies is helping the folk artists become more popular and reach new audiences, while also reducing some streams of revenue, particularly for businesses engaged only in music production and distribution; and three, music piracy is widely tolerated by musicians, both out of apathy and an interest in reaching new audiences, thereby expanding the reach of their message, and their own fame and associated patronage.

The rest of this chapter is organized as follows. The next section summarizes the prior work that is most relevant to my research. The following section describes my research

methodology, including a description of the field sites I visited. The next three sections summarize my main findings, including the motivations for listening to and performing folk music in the communities I study, the impact of new media technologies on the performance, production, sharing, and dissemination of local folk music forms, and the perceived impact of widespread music piracy. I conclude this chapter with a discussion of these findings.

2.1   Related Work

Before recording technology was available in rural India, music was performed and listened to primarily in live concert settings. The trend towards new media adoption in rural India began with the widespread use of audio cassettes approximately 25 years ago, when most people were first able to listen to music at will (Manuel, 1993).   Johnson's study (2000) explores the social environment of village life and the role that television plays in the ever-changing landscape of rural India, looking at the lives of villagers and their evolving relationship with TV, and the role of television in the dynamics of social change.

> "Though television began in India as a limited developmental tool with programming orchestrated by the government, the medium today has blossomed into one of the largest competitive entertainment industries in the world. Villagers are not simple peasants passively waiting to be manipulated and prodded into action by their government, but are active members of a vibrant society using the media for their own advantage." (Johnson, 2000:226-227)

Among other studies on mass media and how it impacts folk arts in rural India, Sharma (2007) has studied how television, VCDs, and audio cassettes have impacted the *Nautanki* folk theater art form, concluding that both continue to coexist, and the popularity of Nautanki remains unaffected, though its content has evolved over time, especially because of its relevance to the contemporary rural context.

Especially within the last 5-10 years, new media technologies such as DVDs, CDs, and mobile phones have gained considerable popularity in rural areas, offering many in the villages a personal device that they can use to listen to their content of choice. Even many low-end mobile devices have FM radio, audio players, and recorders. Among other changes, this has allowed folk musicians to reach out to wider and varied, geographically-distributed audiences. This transition to digital media has been facilitated to a large extent by the mobile phone. As Bellman (2009) says:

> "In the furthest reaches of India's rural heartland, the cellphone is bringing something that television, radio and even newspapers couldn't deliver: Instant access to music, information, entertainment, news and even worship." (Bellman, 2009:1)

Smyth et al. (2010) show that entertainment is a major motivating factor driving mobile media sharing in urban India. My findings are in line with theirs on content access and

distribution, although they studied urban users while I explore the rural space. In addition, I discuss the practices that lead to the production of user-generated content - in this case, folk music.

2.2   Methodology

This chapter presents the results and analysis of a set of in-depth, semi-structured interviews and several sessions of participant observations, group discussions, as well as recorded feedback sessions from four sites in North India. All data was collected in Summer 2010 after my preliminary visits in July, August, and December 2009. The sites I studied and the ethnographic methods I used are described below. I selected these sites not only because they have traditionally been (and continue to be) rich in folk music culture, but also because they are experiencing rapid adoption of new media technologies (as is true for most of India). The study participants included folk musicians, community members who actively listen to local forms of music, and the local retailers of this music.

Malwa (Madhya Pradesh)

Malwa is a region in the west of Madhya Pradesh with a population of almost 19 million in 2001 (Census of India, 2001) that has traditionally been known for its rich folk culture. The site I focused on for this study includes the small town of Maksi and the village Luniyakhedi which may be considered a 'satellite village' of Maksi. One of the best-known folk musicians of Malwa lives in Luniyakhedi, which makes this village a frequent venue for performances large and small (Kumar & Parikh, 2010). The community here is primarily agricultural and literacy rates hover around 40% (Census of India, 2001). Recent penetration of digital technologies is significant, with almost every household owning at least one mobile phone.

In Malwa, I conducted interviews with 6 musicians, in addition to conversing with 20-25 local residents of Luniyakhedi and neighboring villages. I also explored the commercial market areas of Maksi and interviewed 10-12 shop owners who were involved in the production and sales of folk music (along with other popular music). The participants were mostly literate with 6-8 years of schooling, although others ranged from being illiterate (some of the local residents) to being a middle-school teacher (one of the artists).

Bikaner (Rajasthan)

Bikaner is a small semi-urban district in the north-west of Rajasthan that enjoys a wide listenership of folk music. Festivals with folk performances and concerts are regularly held here and in neighboring villages, and are well attended. There is an increasing trend towards using digital media for listening to and sharing music. One of the local music experts I interviewed estimated that Bikaner now has 3000 mobile shops. He also claimed that every

Figure 2.2: A mobile shop in Maksi. This photo was taken in August, 2011.

adult in Bikaner, rich or poor, owns a mobile phone. Access to technologies such as laptops, computers, and the Internet in general is much greater here than in rural Maksi. Literacy rates and technology-awareness are also greater. Professional backgrounds are much more varied, as I found from my participants.

In Bikaner, I interviewed 4 local musicians, some of who live in the town of Bikaner, while the others live in a village called Pugal about 40 km from Bikaner. I also spoke with 20-25 active listeners of folk music (these were from Bikaner as well as neighboring villages such as Pugal), and 3-4 distributors (all from Bikaner) who have been involved in the sales of folk music - many of them transitioning all the way from selling audio cassettes to using the latest digital technologies.

Figure 2.3: Usta Bari, my home in Bikaner. This photo was taken in July, 2011.

Gurgaon (Haryana)

The demographics of Gurgaon are starkly different from those of the Malwa region and Bikaner. It is more urban, due to its close proximity to New Delhi. Relatedly, it has a large low-income migrant worker population that actively listens to folk music, including several local folk musicians who regularly perform here. In Gurgaon, I worked with the *Gurgaon ki Awaaz* (www.trfindia.org) community radio initiative that began in 2009 and actively seeks out and records local musicians, soliciting regular feedback from its listenership.

The data I collected in Gurgaon draws upon informal interviews and focus group discussions with 6-8 members of staff and local volunteers at the radio station, as well as 10 listeners and 6 musicians. It also includes analysis of recordings of prior feedback sessions with listeners (approximately 60) over the previous year. Most of the radio station's listeners are uneducated local Haryana residents, but many migrant workers also call in regularly to

request songs and/or provide feedback. The occupations of the callers ranged from farming to carpentry, tailoring, driving taxis, and other odd jobs.

Jhansi (Uttar Pradesh)

In the Bundelkhand region, which runs across the border of Uttar Pradesh and Madhya Pradesh states, I visited *Radio Bundelkhand*. This is a community radio initiative that began in 2008 and now caters to approximately 120,000 people across 120 villages, as I was told. Like *Gurgaon ki Awaaz*, the staff here is intimately connected with the local community, conducts frequent field visits, and has encouraged the growth of folk music and musicians in this region by catering to the musical interests of the local community.

Here I conducted informal interviews and discussions with the entire staff of 14-15 people, observed recordings of 3-4 folk performances as conducted by them, and also interviewed 3 local musicians. In addition, I was able to observe the live recordings of shows in which local villagers call in to request playback of their desired folk songs and engaged in varied conversations with their radio show hosts.

Several factors dictated the use of methods, including the geographic setting, level of access and comfort with the community, and the nature of music practices. There was a continual need to improvise on the modes of data collection based on the availability and accessibility of subjects and other resources, as well as available infrastructure for sharing music. Different methods worked for different sites. At the community radio station sites, it was more beneficial to hold interviews at the radio station itself because this allowed me to sample a range of musicians and listeners, considering the large geographical spread of participants. At the other sites, interviews were based on personal contacts of local musicians, who in turn were contacted via my several partner organizations. One-on-one interviews were possible in certain other contexts. In other places, informal group discussions were conducted[1].

The data collected was in the form of audio recordings and hand-written field notes. All interviews and discussions were conducted in Hindi (my native language). I then transcribed these recordings and translated them to English. Due to the mix of methods, sites, and participants, I ran the data through several passes of coding, repeatedly consolidating to arrive at the findings I present here. My focus was on observing and understanding the themes at play within the realm of folk music listening and sharing practices. From an iterative analysis of my data, three main questions of interest emerged for consideration:

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[1]Among these four, I revisited Maksi and Bikaner several times during the course of my dissertation research. Not so for the community radio initiatives that only contributed to this particular study. Not all relationships in the field run smoothly, I learned, from my interactions with these radio stations. I thus went on to focus on Maksi and Bikaner as my non-urban sites.

1. What are various motivations that underlie the sharing and listening of folk music within these communities?

2. How are new media technologies influencing these practices and supporting these motivations?

3. How do considerations of piracy interact with these changes?

These questions guided subsequent data analysis, and the resulting findings are elaborated upon in the following sections.

2.3   Motivations and Benefits

In order to understand the listening and sharing practices within the folk music communities in each of these sites, I first focused on the underlying motivations for and benefits obtained from listening to this music. Why do people listen to this music? What do they believe they gain from it? Do the participants listen to it solely for their entertainment? Does it also serve as informal education - either in the form of spiritual guidance or by inspiring a more socially conscious, community-oriented conduct? The answers I received to these questions are organized and summarized below[2].

Entertainment

I observed in this study that entertainment plays a key role in folk media sharing in rural India. This is in line with Smyth et al.'s findings (2010) in the Bangalore metropolis. Folk music is one of the major local and accessible sources of entertainment, and families spend significant portions of their time listening to or performing it. A participant from Malwa claimed that in every local household, entire families watched folk music VCDs/DVDs for at least 1.5 hours every evening. In Gurgaon, a local tailor shared that he listened to folk music on community radio from morning to night - either on his radio at home, or on his mobile phone through his work hours. Radio Bundelkhand even designed a local version of a popular talent-hunt show, called *Bundeli Idol* - seeking to identify upcoming folk musicians in the region - which generated considerable public interest (Chandrasekharan, 2009).

It is worth noting here, as the image above shows, live concert settings continue to draw crowds, regardless of the availability of this music in recorded form. People come together to listen to the artists as they sing and share their lessons on spirituality. The community factor is no doubt a potent one towards attracting greater crowds. These concerts are held regularly and on particular occasions (such as *Guru Purnima* when the *guru* or 'teacher' is extolled), and thus become embedded in the local culture.

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[2]Here I should clarify that the 'benefits' obtained are defined thus by the participants of my study and do not draw from my personal values. Of course, as an inherently biased observer and interviewer, it is possible and entirely likely that my own subjectivities could have skewed my data.

Figure 2.4: The women sit together (through the night) at a Kabir folk music concert in Luniyakhedi (Malwa). Photo: Hari Adivarekar.

Spiritual Education

Folk songs have varying flavors across the Indian landscape. In the performances I observed at Malwa, almost all songs had a significant spiritual bent since they were composed out of Kabir's poetry. Along with singing, musicians were equally engaged in sharing with the audience the spiritual lessons they had gleaned from these songs. Within the smaller concerts I observed (*satsangs*[3]), the audience was often engaged in two-way discussions on these topics. In Malwa, one of the locally-revered folk musicians I interviewed shared with me that, over time, these discussions were "most certainly" successful in bringing about positive change in the character and mindset of the listener. Another musician from Malwa shared his experience of working with the *Kanjar* caste, an ostracized community infamous for its crime rate in different regions of India. According to this musician, in the months that he practiced and taught music around the Kanjar folk, the spiritual content of the music led the people of this caste to gradually adopt a more peaceful and harmonious approach towards life.

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[3]The word *satsang* literally translates to 'in the company of Truth'. It is commonly used across India to refer to a gathering of people united in and celebrating their religious or spiritual beliefs.

> "In 1991, I worked with the Kanjar folk, who are known to have a high crime
> rate. There we did many satsangs and the music gradually brought in a positive
> change (*parivartan*) about them. Those who brought themselves in the company
> of this music...they quit smoking, drinking and of course, robbery. My goal was
> to sing songs that would coerce them to think for themselves, not to preach any
> kind of conduct...this brought about a change in about 40% of their community
> of 15-20,000 people."

I later learned from one of my interview participants that the popularity of Kabir's music
in these regions of Malwa and Bikaner that I explored can largely be attributed to the
predominance of untouchables in these communities. These castes have long been kept out
of the local sites of religious worship such as temples or shrines, even if they are Hindus.
Not only do these concerts and the music then offer a welcome respite, a safe space for them
to exercise their spiritual freedom, but Kabir's stress on equality across castes also makes
this music especially relevant for them. This brings me to the discussion of communal and
regional elements.

Communal and Regional Harmony

In Pugal, a village near Bikaner, I interviewed a family of locally well-known folk musi-
cians. They shared that in their village, the Hindus and Muslims had never had problems
with each other, because the local music traditions that were secular in nature had brought
these communities closer together. One of the artists in the family shared:

> "Before the rains come, the Hindus and the Muslims in the village come together
> to hold *satsangs* in the local temple. Everyone gets together."

Once again, these Hindus and Muslims that the artist mentions belong to the untouchable
caste. More importantly, Kabir is of the few mystic saints who was uniformly accepted across
communities of both Hindus and Muslims[4]. Here in Pugal, this makes Kabir folk music a
common interest, bringing together people of both faiths.

In Gurgaon, the local Haryana dwellers were initially resistant towards the community
radio station airing music from other regions (e.g. Bihar, Rajasthan, Gujarat) because
migrant workers came from these regions and requested the music from these traditions.
This led to several disturbed and resentful phone calls to the station's hotline. As Rajni, a
member of the local staff, assured a local caller:

> "Just as you like to listen to songs from your tradition, they [the migrant workers]
> like to listen to songs from their traditions. Just as they also listen to songs from

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[4]As Virmani shows in her documentary film Had-Anhad (2008), Kabir's faith was never quite confirmed.
He was said to be born Hindu but raised by Muslims and his words always spoke to Hindus and Muslims
alike. This makes him equally popular to people of both faith.

> your tradition without any complaints, you too should try to listen to their songs
> and learn to accept their different style of music."

Over time, according to the community radio staff, the local Haryana listeners have become more accepting towards different folk traditions and, as a result, towards the migrant worker community coming from other Indian states. At least, this is what they gauge from the evolving nature of the feedback they receive from their listeners.

Classroom Education

With traditionally low rates of literacy among women, efforts have been initiated to focus on the education of the girl child. In Dewas, a small town in Malwa, there is an ongoing project (across twelve schools) that uses Kabir folk music to inspire girl children to pursue their ambitions, and encourages their families to support their education. Run by two local folk musicians, the project teaches Kabir folk songs to the schoolchildren, encouraging them to discuss these teachings and ask questions. The project also aims to create a syllabus using folk songs that inspires children to stay in school (Hess, 2010).

In a concert I observed in Luniyakhedi (Malwa), a local artist (who was also hosting the event) sang songs and gave a speech to inspire the girls in the audience, and invited other women who were present to impress upon the girls and their families the importance of primary school education. In my interview with this artist, he also explained that although he would have liked to devote himself to his music, teaching brought him fulfillment because it allowed him to work with and inspire the girls in the community (he teaches at a girls' school) - who were at an impressionable age - to study further and "make something of their lives". My visit to this school confirmed that the girls there perform better on average and are also more driven to perform.

Social, Cultural, and Environmental Awareness

My interviews with up and coming folk musicians at Bundelkhand and Gurgaon revealed that the songs they sing are not just limited to oral traditions that have been passed down generations but also include new compositions with contemporary references. They are written to address local needs that are often social, environmental, agricultural, or health-related. As a Bundeli artist shared - he composes songs based on the occasions/settings where he has been asked to sing. Not only does he sing these himself, but he also composes new songs for other local Bundeli musicians who pay him INR 200 ($4-5) per song. He had recently composed a song for the local radio station on the benefits of afforestation.

In Gurgaon, Meghna - who runs the community radio initiative - shared that they had recently played a *ragini* (composition) that had been written by its Haryana artist on the theme of female infanticide. As Meghna shared, the radio station received several feedback

calls from individuals who were moved by this piece and claimed that it had "opened their eyes". In general, the data I collected at each of these sites showed that many musicians are keen on composing and selecting songs that can have a strong social impact, encouraging people to lead better and more socially aware lives.

I organize my findings above as motivations and benefits particularly because the motivations for some become the benefits for others, and it is a challenge to separate these two, not only for me but also for my participants. My primary goal here has been to uncover for the reader that folk culture holds a special significance for the communities I study, be it because of their religious or spiritual leanings, their social ostracism based on their castes, or simply the community spirit that this fosters. It spills into various facets of rural and small-town living, and has thus welcomed the integration of new media technologies as I discuss next.

2.4 Use of New Media

My second question examines the changes in folk music production and dissemination brought about by the influx of new media technologies, from the point of view of three main actors: the musicians, members of the listening community, and the local businesses who engage in the sales of this music within the rural context. My findings show that the last two decades, in particular, have seen increased and widespread access to new media in the form of television, CDs, VCDs/DVDs, community radio, and mobile phones. With high penetration of these technologies, especially in some of the more developed portions of rural India, villagers have the option of listening and sharing their music in more forms and ways than ever before. While I describe these more elaborately in Chapter 3, I offer an introduction below.

Acquiring Mobile Content

In the last 3-5 years, mobile phones have become increasingly prevalent in rural India. Just as the advent of audio cassettes further popularized folk music (Manuel, 1993), the use of mobile phones appears to have increased listenership considerably, making folk music (as well as other music) far more accessible among villagers than before. At a Kabir festival in Luniyakhedi (Malwa) that was attended by 2-3,000 people from neighboring villages, I observed hundreds of people in the audience holding their phones up high and pointing them at the stage (where 30-40 folk troupes from the Malwa region were taking turns performing from 6 pm to 4 am). This was done, as I later found, to make both audio and video recordings of the performances that could subsequently be listened to on demand. On further questioning, I discovered that instead of the attendance at live performances going down, these recordings served as 'advertisements' for local musicians, keeping the listenership alive and growing.

To understand the mobile media use of these communities, I conducted interviews at 5 of approximately 10 mobile phone outlets in the town of Maksi[5]. Not only do these businesses engage in the sales of mobile phones, they also often house a desktop computer that serves as a media library (of approx. 150-200 GB). A customer typically receives a full allotment of music as a perk for buying a phone, or for obtaining some other product or service. In each of the shops I visited, I found that the shop assistants who operated the media library were about 15-20 years old, male, and had minimal technical training. They were well versed, however, in compiling various thematic assortments of media, maintaining directories of 1GB/2GB audio and video collections, which they would download onto various phones. Charges ranged across the shops from Rs. 20 to Rs. 80 ($0.5 to $2) for 2GB of content. There were no clear answers received for why this wide a range existed. One of the shop assistants said, however:

> "I have good knowledge of music. That is why I charge a higher price. Because quality is better."

By quality he did not mean the audio quality of the music. He was referring to his assortment being superior to others because, in his words, he had better taste.

Since there was no Internet access available in Maksi at the time of this study, I was eager to find out how the shop owners obtained their media libraries. I found that all of these came via physical storage media from shops (of relatives or family friends) in either Ujjain or Indore - the two major cities in Malwa. To further augment their collections, they often uploaded the content from a customer's mobile phone onto their own computer before downloading new content. Phone owners received no compensation or consideration for this practice.

Transition to Digital Stored Media

Most of these shops were previously electrical goods or photo-printing outfits, transitioning to become mobile phone outlets in the last 3-5 years, to address a rising demand for devices and music downloads. The transition from cassettes and CDs to mobile stored content has been steady. As one of the shop owners informed us:

> "We stopped keeping tapes [audio cassettes] four years ago. No one wants CDs anymore. Only mobile."

This transition to digital media was visible at other sites as well. At the community radio sites of Gurgaon and Bundelkhand, I found that the listeners frequently use their mobile phones to listen to the radio content (on speaker mode). One participant in Gurgaon shared that before the community radio station was launched, he did not have regular access to music.

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[5]The number continues to rise, as my later visits have revealed.

> "Before Gurgaon ki Awaaz, I did not own any CDs or audio cassettes. Now, I listen to music of my choice [folk songs] all the time [on my phone], when possible even through the night."

In Bikaner, I observed pilgrims who walk 200 KM to attend the annual Ramdevra festival - in honor of Baba Ramdev, a deity with a phenomenal regional presence[6]. Nearly all of these pilgrims listen to devotional folk music on their mobile phones as they walk (earphones may or may not be attached). More pilgrims now choose to walk, I was told, because they have this constant source of entertainment with them.

Decline of Audio Shops and Recording Studios

While businesses that distribute music in the form of mobile downloads have multiplied in recent years, recording studios and audio-only shops appear to be on the decline. One of the shop owners I interviewed in Bikaner, who had been in this business for many years, said:

> "The market of CDs and audio cassettes has gone down by 85% in the last 3-5 years, ever since the mobile phone gained widespread use. People no longer want to listen to cassettes or CDs. They prefer mobile modes of listening."

His shop used to produce albums of folk musicians but he no longer earns a profit from this. He now rents his studio space to musicians and lets them take responsibility for their own distribution. This, however, requires an investment by the artist and has therefore not been a very successful business model thus far. Note that this does not mean that the singing or listening of music has gone down. What this means is that fewer albums are produced by local folk artists, and there is a gradual movement towards a more democratized generation of media.

A Shared Experience

My interviews indicated that almost every household - in each of my field sites - had at least one mobile phone. It was interesting to note that while the mobile phone is a personal, portable device, it can also provide a shared listening experience. The desire to share music with one's friends and family was a common theme among the listeners I spoke to. One of the respondents from Gurgaon shared:

> "We listen mostly in groups. There are [usually] 2-3-4 of us. Kids also listen. Adults also listen. We listen together."

When asked how they share songs with their loved ones who may be away at the time, one of the Gurgaon respondents said that he would call his friends and tell them to turn on

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[6]The festival draws a crowd of around 1-1.5 million, of whom 500-600,000 choose to walk.

and listen to the radio, or else he would record the piece using the audio recorder on his mobile phone. The key point to note here is that the traditional 'small-concert' experience of listening to folk music is now translated to a different space - the home of the listener. While those who had televisions or radios could have done this before-hand, the mobile phone - due to its widespread adoption - offers this experience to more households for a cheaper price, and virtually on demand. It also connects individuals (friends or family members) across spaces as they all listen to the same music at the same time, thanks to a phone call.

From Audio to Video

Many listeners I interviewed across sites shared an increasing motivation to transition from audio content alone to video as well. Be it on the small screen of their mobile phones or on their DVD players at home, listeners like to watch video recordings of the musicians. One of the Malwa folk artists I interviewed said:

> "Five years back, people were only interested in listening to music on cassettes, radio and CDs, but now people are demanding music with video. They don't buy if you don't give them songs recorded with video."

Some shop-owners work with local musicians to help them produce video recordings to address this demand. This offers a more complete experience, more closely mimicking the live concert experience for the listeners.

2.5 Piracy

A discussion about the influx of new media technologies in folk music practices of my sites would be incomplete without mention of the rapidly growing music piracy and how the different segments of the communities that I studied respond to this phenomenon. This is not to imply that piracy did not exist earlier, in the time of the audio cassette, but there has certainly been a rise, a phenomenon I will discuss in Chapters 3 and 4 as well.

The most straightforward and transparent approach to music distribution that I observed was at the community radio stations. The stations have low-tech recording studios of their own, and play only those songs that have been recorded by them here. For every recording, they sign an agreement with the musicians that, in return for allowing the musicians to record themselves live, they obtain the rights to air that recording on their station when they choose. In exchange, *Gurgaon ki Awaaz* provides the troupe of musicians with a CD of the recording that they can duplicate and share as they like.

My findings show that well-known and older folk musicians who could previously afford to sell their audio cassettes and CDs have lost a substantial portion of their potential earnings due to the widespread sale of pirated recordings. Lesser-known musicians do not have the

name or resources to obtain recordings in the first place. As a result, the folk music market is currently dominated by local individuals and businesses who use low-cost recording devices to obtain recordings from live performances and sell them at low rates to interested listeners, almost always without permission from the musicians. I asked the folk artists I interviewed to share their views on this practice, and on piracy overall. The strongest opinion I heard against piracy was from a musician in Bundelkhand who said:

> "The voice should have a price."

When asked to share their views on how this practice made them feel about their music - the fact that their CDs were reproduced without their earning revenue from the sales - the general view was one of passive acceptance. An artist from Malwa said:

> "What can we do if a robber comes, steals our goods, and runs away? It is not in our control."

When asked if they approved of the practice, the musicians were convinced that it was unfair. Those who composed their own versions ('covers' if you will) of existing folk songs felt that the lack of remuneration of their efforts was 'robbery'. On the other hand, those who sang folk songs as had been passed down through generations were more accepting. Their primary interest was in spreading the word of great poets and saints through their music, whether or not they received remuneration for their art. As a result, several of the artists were ambivalent about piracy. One such artist from Bikaner offered an optimistic perspective:

> "There is no solution for piracy. You just can't stop people from copying music and law doesn't work in this case. This kind of access to music for the common man shows that music is priceless. Now we can listen to one thousand songs by paying just INR 100 [$2]. Do you think we are paying for music? The shopkeeper is not charging for music; he is charging for the software in which he has invested."

Piracy leads to illegal but wider distribution of music and therefore also serves to extend the popularity of several musicians, making it a more level playing field. Piracy therefore creates an opportunity for increasing the remuneration for musicians through live performances - even for up and coming artists who are not already well known. Echoing this sentiment, one Bikaner artist said:

> "Singers are still on the safe side because when people record our music on their mobile devices at any live performance, it spreads like fire. People get to know about our good performance only through these devices and we get publicity as well as more shows to perform at. On the one hand, the CD and cassette business may have gone down, but on the other, the demand for our live performances is rising."

In general, illegal duplication of media content ('doubling') appears to be widespread and socially accepted. Local businesses that I interviewed in Malwa and Bikaner did not offer any resistance to sharing the details of their business. On the contrary, they were proud to exhibit their large media libraries and openly discussed the great efforts they had gone into to procure them. Naturally, listeners also benefited from cheap and ubiquitous access to folk content[7].

2.6 Discussion

The findings I present in this chapter first highlight the deep social embeddedness of folk music in rural and small-town India, then examine the ways in which new media technologies (and particularly the mobile phone) are redefining the ways in which this music is produced, consumed, and disseminated. My larger goal is to show that new users of these technologies are motivated to use them for the production of long-standing cultural practices.

There is undoubtedly an impact on the artists as their music is pirated indiscriminately as a result of the digital technologies that infiltrate their domain. My interviews show that it is not one or the other, but that both money *and* fame are important to these artists. While no artist denied that he would prefer to receive remuneration for his art, almost all recognized and appreciated the patronage they received on account of widespread (but illegal) distribution of their works.

With the availability of low-cost and easy-to-use recording devices, the technological skills and capacity required for producing and distributing music need not be limited to local businesses. Musicians and/or their troupes and families can, with moderate effort, be trained to create, share, and market their own recordings. This allows more musicians (not merely the famous ones) to get their music into the ears of their target audiences. In this vein, one of the musicians I interviewed at Pugal (near Bikaner) shared his personal success story. Although folk music had run in his family for generations, he had performed only in his village and in Bikaner until four years ago when his talent was discovered by Virmani who featured him in one of her documentaries on Kabir (2008). Since then, he has had the chance to perform in several locations within India and even overseas, and earns enough from his music practice to have built a *pukka* (permanent) house in Bikaner and to put his children through school. Naturally this is not every artist's story, but it is testament to the fact that digital recording technology can increase listenership, reaching out to larger and more diverse audiences than before[8].

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[7]I discuss the listeners and how they benefit from music and media piracy in the chapters that follow.

[8]I admit that I myself was driven to explore the Kabir Project because I was struck by the virtuosos Virmani had introduced through her films, including this artist from Pugal.

The influx of new media technologies such as DVDs, VCDs, and mobile phones has fueled the desire of users to partake of video as well as audio content. As a participant said, "Now we can see what we are listening to." This trend appears to please some while it makes others unhappy. An artist from Bikaner shared:

> "I don't like the way folk is presented on a television screen. Folk on television does not appear *jivant* (live). It is not good to see music instead of listening with proper attention."

Opinions aside, it must be noted that both options are now available to the listener, who can choose the mode he/she prefers.

The standard copyright procedures in India have historically been cumbersome and expensive. As a result, the average folk artist does not consider it worth his effort to copyright his music. If simpler and more affordable means for protecting content and compositions are made available to musicians, they may explore this possibility. The head of one of the community radio stations that I visited brought up this issue. He showed me a printout of the Copyright Act of India (Government of India, 1999):

> "According to the Act, the listener will have to pay INR 400 ($10) for every CD that the artist copyrights. That is so expensive. Why will he do that if the same CD will be selling in the local market for not more than INR 20-30 ($0.5)?"

However, the bigger roadblock here is that legal knowhow is hard to find. None of my participants, even those relatively more educated than others, had a clear idea of what copyrighting one's music entailed, or what the implications of copyright infringement were. Enforcement of copyrights in these regions, in the rare occasions that the music *is* copyrighted, is laughable at best. In the perfect world that this is possible, however, excessive protection and enforcement would limit the spread of folk music, limiting also its spiritual reach and musicians' opportunities for patronage through live performances and other appearances.

Due to the increase in piracy and low-cost distribution, the quality of music the community is listening to has also suffered. Access to a much wider variety of musicians, recordings and recording qualities leads also to a less cultivated sense of taste and thoughtful listening. As an artist from Bikaner stated:

> "Those who have 500 songs in their mobiles are constantly changing songs without paying attention to any particular song. They don't know what to listen to."

Of course, this is the opinion of the artists. Chapter 3 looks more deeply at the listeners' perspective.

2.7   Conclusion

The research presented in this chapter focused on the emergence of new media sharing practices for the production of folk culture in particular communities of Malwa, Bundelkhand, Bikaner, and Gurgaon. Through the use of a combination of ethnographic methods at each of these sites, I sought answers to three main questions:

1. What are various motivations underlying the sharing and listening of folk music within these communities?

2. How are new media technologies influencing these practices and supporting these motivations?

3. How do considerations of piracy interact with these changes?

My findings highlight that one, there is a diverse set of motivations for and perceived benefits from performing and listening to folk music; two, new media technologies allow for this deeply embedded folk music culture to be propagated, helping folk musicians become more popular and reach new audiences while also reducing some streams of revenue, particularly for businesses engaged only in music production and distribution; and three, the resulting media piracy is widely tolerated by musicians, both out of apathy and an interest in reaching new audiences, thereby expanding the reach of their message, and their own fame and associated patronage.

This chapter is an introduction to the space of culture, technology, and agency within the context of development and therefore serves as a precursor to the research that follows. Several of the themes encountered here will recur throughout this dissertation, as I continue to analyze the mobile and media practices of Indian youth from low-resource backgrounds.

Chapter 3

Mobiles, Music, and Materiality

"We wake up to radio sounds, walk to music, drive to sound and often relax and
go to sleep accompanied by reproduced sound. Music follows us to work and is
there when we shop, when we visit pubs, clubs and theme parks. Yet despite this
routinisation of sound in consumer culture, it retains a largely 'utopian' place in
consumer desire."
(Bull, 2005:347)

Building on recent research that asserts the materiality of digital information, I examine
the material nature of digital media and information technology in the context of mobile
music production, reproduction, and reception in rural and small-town India. I use ethno-
graphic methods to study the recent adoption and use of mobile technology and discuss my
findings in relation to the evolving materiality of music. I also investigate the sociotechnical
configurations that emerge as a consequence of this materiality. Thus I contribute to fur-
ther Human-Computer Interaction research by showing how the material representations of
digital media affect interactions of humans with technology.

3.1   Introduction

We live in an age where it is commonplace to talk of information in terms of its apparent
immateriality. Recent HCI research has been working on correcting this notion and expos-
ing this *trope of immateriality* (Blanchette, 2011) by establishing that digital media cannot
be stripped of its materiality because of the material constraints that underlie computing
infrastructure. Dourish & Mazmanian (2011) assert the need for studies of materiality of
information and information technologies to engage with the specifics of different properties,
representations, and materialities of digital information itself, bringing these materialities to
the center of investigation. In this chapter, I engage with the materiality of digital media,
examining the 'aspects' and 'effects' of this materiality (Burrell, 2013), and aligning myself
with the recent shift in HCI from conversations about materials to discussions of materiality.

Materiality, as an analytic concept, has informed research in a list of domains, including interaction design, energy and sustainability, spirituality, etc. (Sundström et al., 2011; Rosner, 2013; Pierce & Paulos, 2010). Its analysis holds important consequences for the field of HCI, as it draws attention to the specificities of digital culture, shaping the development of digital media and information technology, and how we frame and interpret the social contexts of their assembly and use. In this chapter, I aim for a deeper understanding of the 'potentialities and constraints' (Dourish & Mazmanian, 2011) of the materiality of digital media, particularly in the context of emerging mobile music practices.

My ethnographic findings from small town India show that the mobile phone is different from the media that preceded it for music consumption, primarily because its *affordances* (Gaver, 1991) are many, as compared to other entertainment devices that have been dedicated music playback devices. Due to increasing affordability of multimedia-enabled phones and voice/data plans and wider penetration of mobile coverage, the mobile phone has quickly become the most prevalent digital music device in the infrastructure-challenged resource-constrained communities I study. A major objective of this chapter is to draw attention to the material nature of this mobile phone and its impact on music procurement, consumption, and sharing practices.

Magaudda argues that while changes have occurred in music materialities and technologies have influenced practices of music consumption, "interpreting these changes as a loss of relevance in the role of material objects in shaping people's habits and cultures may be misleading" (Magaudda, 2011:18). Building on his work, I discuss aspects of the changing materiality of music and its consequences on music production, reproduction, and reception in small town India. I also describe the sociotechnical configurations that arise as a result of this change in materiality.

The rest of this chapter is organized as follows. I first summarize prior research that informs my study, then describing my research methodology and the field sites I visited. Next, I draw attention to the materiality of music production, reproduction, and reception, describing relevant mobile practices in the context of my ethnography. I then describe the sociotechnical configurations - the download market and its related practices - that have resulted from this materiality of digital media, before I discuss and summarize my findings.

3.2 Related Work

Bull (2005) investigated the culture of mobile listening through the lens of the iPod, showing how the micro-management of personalized music gives users control over their 'experience of time and space'. Magaudda (2011) extended this work by establishing the material nature of music, using iPod adoption among Italian users as a case study. I build on Magaudda's work by studying the changing materiality of music in the context of mobile

phone use in developing regions. Using the production, reproduction, and reception of music in small town India as a case in context, I aim to provide a better understanding of the advantages and limitations of the materiality of digital media.

Recent HCI research brings questions about the materiality of digital information to the forefront. These efforts include Blanchette's (2011) analysis of the materiality of bits, Dourish & Mazmanian's (2011) framework that allows us to examine the potentiality and constraints of materiality, and Sundström et al.'s (2011) study of dynamic properties of digital materials. Burrell's (2013) discussion of the aspects and effects of the material nature of digital technology also informs my work. Drawing from these works, I contribute to an understanding of the materiality of digital representation of musical bits. In performing a user-centered analysis of the materiality of the mobile phone as a medium for procuring, consuming, and sharing music, I draw attention to Gaver's (1991) definition of *affordances*, wherein the actual perception of affordances is "determined in part by the observer's culture, social setting, experience and intentions" to examine the aspects of the mobile phone that enable the music practices we study. Also relevant to this work is the idea of cultural constraints and conventions introduced by Norman (1988). My use of ethnographic methods enables me to offer a deeper insight into these affordances.

The sociotechnical configurations I investigate - that result from the materiality of digital music - have also been empirically explored by Smyth et al. (2010) who study the role of entertainment as a motivator of technology adoption and in my prior research, where I examined piracy in the context of live and recorded folk music in India. I confirm these findings and extend this research to include both music and aspects of music consumption previously unexamined. I also draw attention to specific affordances of the mobile phone that have enabled a unique set of listening and sharing practices. Having used the same field sites enables me to build on prior work and provide a more complete (and updated) examination of local media practices, shifting focus to technological affordances that impact social consumption practices.

3.3   Methodology

The findings I present in this chapter come from a set of semi-structured interviews, sessions of participant observation and group discussion, and mobile phone data collected at two field sites in North India. The data was collected in multiple field visits from 2011 to 2012. The sites were Maksi and Bikaner, which I described in Chapter 2. As mentioned earlier, these were selected for two primary reasons. First, they have both had a rich culture of listening to and sharing music - in live and recorded form. Second, like much of India, they have experienced a rapid increase in the adoption and use of mobile phones, leading to a bustling mobile downloads industry centered on the sales and distribution of various

mobile media including songs, movies, wallpaper images, and ringtones.

At each of the field sites, I sought two primary kinds of informants: music consumers in the age group 18-35 and download operators - individuals operating businesses that entail mobile phone sales, balance recharges, media downloads, application downloads, repairs, and other mobile-related services. In addition, I interviewed community members who have been engaged for several years with the local music industry and are informed of evolving trends in the consumption of digital media. I visited 6 mobile shops at each site, targeting the mobile hubs, and had detailed conversations with each of their shopkeepers and assistants (1-3 in every shop). In this chapter, I draw from my interviews with 20 music listeners (10 from each site), whom I selected using snowball sampling, and 6 local music experts (3 from each site).

The interviews were semi-structured, and lasted around an hour on average. Most were held one-on-one, although other individuals would frequently saunter in to see what was going on - especially when we were in the marketplace. This sometimes led to rich group discussions, though it also tended to discourage the quieter participants from openly sharing their inputs. Interviews with the music enthusiasts took place in their homes or the homes of their friends. My intention was to seek out youth who used multimedia-enabled phones (focusing on 18-25 year-olds) and they were easy enough to find - all the users I came across fulfilled that criteria. The language of mediation for all interviews was Hindi. No translation or interpretation was necessary, since I am a native speaker.

I also observed the marketplace to better understand the transactions occurring within the shops I visited, as well as the clientele and the kinds of needs/demands they came with. These led to informative exchanges and enhanced the richness of the data I collected. Without controlling for gender, all the participants ended up being male. This arose from various cultural and social norms in these sites, effectively preventing access to women unless I actively sought them out. For the purpose of this study, I chose not to specifically target women, though in future work it would be interesting to examine women's ownership of multimedia-enabled mobiles and whether there exists a gender bias in the consumption of digital content.

3.4   Findings

I now examine the evolving materiality of music in its production, reproduction, and reception[1], following that with a discussion of the sociotechnical configurations that result

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[1]Here, I draw inspiration from Benjamin's (1968) historical work on the mechanical reproduction of art. In this he quotes Valery thus: "Just as water, gas, and electricity are brought into our houses from far off to satisfy our needs in response to a minimal effort, so we shall be supplied with visual or auditory images, which will appear and disappear at a simple movement of the hand, hardly more than a sign" (Benjamin,

from this materiality of digital music.

The Materiality of Music Production

Magaudda (2011) has shown that digital music cannot be separated from its material form. Building on this work, I first briefly present how this material form has evolved in the context of my ethnography, then discuss the effects of this materiality on current practices of production and reproduction of digital music. In doing so I draw upon discussions with local music industry veterans who have been involved in this production for years, either by operating or assisting at local studios.

"First, it was the cassette..."

Maheshji, whose family has owned a local recording studio for over 40 years, reminisced:

"People used to buy cassettes, listen to good music."

He remembered the audio cassette era as the 'golden era' of popular music when piracy did exist but was minimal (particularly because copying cassettes took more time and was thus cost-intensive), the efforts of local recording companies and studios were recognized and remunerated, and artists received the credit and royalty that was due. Manuel's account also credits the audio cassette for greater and wider consumption of regional music forms as well as Bollywood soundtracks in North India (Manuel, 1993). He verifies that people did indeed buy cassettes widely, as Maheshji claimed, because it was the first time this music was available to them at a reasonable cost.

It was after the entry of the compact disc (CD) (in '92-'94) that Maheshji believes the commercialization of music began. Pirated distribution first became commonplace primarily due to the price difference of an original CD and of (re-)recording on a blank CD. While original CDs would cost INR 300-400 ($6-8), they could be reproduced for INR 20 ($0.40). The transition from audio CDs to MP3 CDs that followed made several more songs available on a CD and at the same cost. As Maheshji said: "Earlier a CD would have 8 songs. Now it has 800."

Though the market for CDs has certainly suffered, we found that regional production and sales of CDs continue. The large urban centers of Jaipur and Jodhpur still have markets that produce and package original CDs with regional and Bollywood content that are then transported to Bikaner and sold. The number of shops selling those CDs in Bikaner, however, has gone down from "100 to 10-15" we were told by Maheshji. He explained:

1968:1). It is this era to which we belong, where the digital representation of media has led to the realization of Valery's claim.

> "If I try to sell one [original] CD today, it will reach 100 computer shops tomorrow and they will load this on to at least a 1000 [memory] cards by the end of tomorrow. How can one shop compete with that? The guy who makes pirated CDs - he will take this CD and copy it into 2000 pirated CDs. . . . We are small hens. They [the pirates] haven't spared anyone. Computer is the main reason. Computer has become so cheap."

The transition that Maheshji highlights above of the material form from the audio cassette to the audio CD to the MP3 CD and finally to electronic storage has increasingly made music accessible and affordable to the masses, both because of the speed and the cost at which music can now be reproduced, thanks to the 'computer'. The most notable contribution in this vein, however, is that of the multimedia-enabled phone. Maheshji attributes the decline of the local music industry to the 'mobile typhoon' and the proliferation of the cheap but powerful memory card:

> "When mobiles began, things were fine. But when the mobile got a memory card, music production began to decline. Now the [original] market has come down to 10% of what it was originally, because of this memory card. . . ."

In other accounts that I heard, the story was no different. Here I found that the changing material nature of music storage had effected a significant historic change for the local music industry. Maheshji's business practice is now limited to providing DJ services at local events. His shop was filled with CDs that will no longer sell, and his recording studio services are availed of by only a handful of artists a year. Indeed his shop is not the only one where stacks of CDs and audio cassettes have been gathering dust. Ramesh, another studio owner I spoke to vehemently expressed his resentment by lashing out at the memory card:

> "The memory card must be stopped!"

Here we see an instance of the 'information metaphor' mentioned by Dourish & Mazmanian (2011). Ramesh's resentment was not for the memory card itself, but metaphorically directed towards the form that the music industry has taken today, resulting in the decline of his business.

"Everything is on *track*."

Not only does computing technology allow almost effortless reproduction of digital music, it has also enabled an increase in the sheer quantity of music produced. The process of writing songs and arranging music has become more 'streamlined' with the use of synthesized 'tracks'. A process that would earlier involve time-consuming and painstaking collaboration efforts of up to hundreds of instrumentalists sometimes, the writer(s), and the singer(s), is now considerably simplified. The recording artist puts together a synthesized background track, obtains a written composition from an artist, and recruits a singer to render this composition over the provided track. The recording studio now invests much less time per

song, incurs lower costs on vocalists and instrumentalists, and deals with fewer scheduling conflicts. In my fieldwork, as I listened to numerous such musical productions, I also discovered the process of *auto-tuning*. To glorify the quality of sound from a less accomplished artist or to hide his/her inadequacies as a singer, the vocals are synthesized into sounding warped, for lack of a better word. The impact of the 'computer' is visible here as well.

Mohit, a 38-year-old local music enthusiast, who has worked for several years at recording studios in Bikaner, Delhi, and Mumbai spoke of this change with remorse:

> "So much labor has gone, so much machinery has gone. . . So many people used to be employed. Now all that is gone. Earlier an audio cassette or CD would go from the original HMV [music company] to the original listener - like it used to come to me. Now why will I buy a cassette or CD?"

Mohit refers here to the reduced cost of digital music arrangement as another effect of the changing materiality of music production. He believes that the originality of musical work is compromised due to this low-cost production.

Music Theft

Even with the reportedly streamlined production, however, I discovered that original compositions are routinely lifted and reproduced. Once again, the ease of doing this overnight at a low cost has a major role to play. Thus, the materiality of digital music contributes towards music theft as well. Amit, a 31-year-old male and local recording artist who is well-networked with local writers and singers, shared:

> "Like we record a composition. . . tomorrow morning it will become public. If I am in the process of making a recording, someone else will leak my composition. Then they will make a copy of that recording and take it out in the market. This has happened numerous times in Bikaner. . . if we don't finish our production and sell quickly, it will be too late."

It is not only the ease of copying from the perspective of the material medium, but also the lengthy and tedious nature of the judicial process that plays a role. Most court cases around the infringement of intellectual property rights, I was told by the local businesses, are yet to reach conclusion. "There is no enforcement against this activity," Amit said, "and when court cases happen, they go on forever. There is no resolution. Only those who have money or power can speed things up." The judicial process has yet to catch up with the demands that the changing materiality imposes on it.

The Materiality of Music Reception

To better understand the materiality of music reception, I focus first on the medium that my respondents use for listening to recorded music - the ubiquitous multimedia-enabled

mobile phone. I highlight both the aspects of the material nature of the mobile phone and its effects on music reception.

The Multimedia Mobile Phone

As mentioned, the mobile phone has replaced audio cassettes and CDs for music listening, particularly with the proliferation of the 'memory card'. I have also summarized recent research efforts that focus on the adoption of mobile technologies in developing regions and the socio-economic motivations underlying this adoption as multimedia-enabled feature phones become more affordable and increasingly ubiquitous. Each of my respondents had one, and on being asked their motivations for acquiring this device, I received two responses - first, to listen to (and store) music on their personal device, and second, because their friends had one (and used it for listening to music). In the accounts below, I highlight the materiality of mobile media in relation to consumption, storage, and sharing.

Shyam, a 23-year-old working with a Bikaner-based non-governmental organization shared that he had never owned a music playback device before, and first bought a multimedia-enabled phone because it could store (and play) songs of his choice. When his friends began to play games on their phones, he had games downloaded on it as well. His phone, however, would not play songs at the same time that he played games, so he bought a new multimedia phone that would allow him to play music and games simultaneously. About listening to music, he said:

> "There should be this much [using hand gestures to indicate a large quantity] music in the mobile. Whether we listen to it or not doesn't matter. That comes later . . . When the mobile is brand new, then we want to use it all the time. All my friends feel this way. . . ."

For Shyam and his friends (whom I included for interviewing in my snowball sample), mobile phone use is closely linked with the listening experience. While making phone calls costs money, they can use the phone to listen to music for as long as they desire. For these youth from low-income backgrounds, this affordance of the mobile phone is significant and a key aspect of the phone. It also motivates the choice of phone to purchase, as in the case of Rajiv, a 27-year-old male from Bikaner. He bought a Nokia 5200 - a phone with single-touch music playback - because he "had no other medium for listening to music." Suresh, 32 years old with two kids, does own a CD player, but he bought a multimedia mobile phone because it was easier to operate this for music (in terms of storage and playback). He likes to store both film music as well as music locally produced in Bikaner particularly for his children's entertainment.

> "My children like the popular film songs such as *Munni* and *Sheila*[2]. . . so I keep these on my mobile. They also listen to the devotional and folk songs that I

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[2]These were two of the most popular Bollywood songs in the year 2011, when my fieldwork took place.

> listen to. . . . We also have a CD player, but this [mobile playback] is the easiest
> thing to do. Because it is easy, it is best. Even children can find and play music
> on this. It is an easy medium."

For Prakash, 22 years old and a resident of Maksi, the multimedia mobile phone is a *'jeb ka laddoo'* - 'candy in the pocket' since "you can keep your favorite songs in your pocket and, whenever you like, take out your phone and listen to them." For villagers, the portability of music and ready access are key affordances, since they allow farmers to listen to music while they are at work in their farms or traveling to sell their produce. One farmer mentioned to me that he would set the mobile on the tube well and listen to music while he worked. The fact that these battery-powered phones are (at least in the short-term) immune to the frequent power cuts or lack of domestic power supply in rural areas makes them more reliable (and popular) than other traditional entertainment devices such as the CD player or the television. According to Prakash:

> "Those who are from the village consider their mobile ready for use only after
> they have gotten a [music] download. That is when they believe that their mobile
> is complete. They do not leave the [mobile] shop otherwise."

In addition to stressing the close linkage of the mobile phone to digital music reception, each of the above accounts also emphasizes the materiality of this experience. In Shyam's case we see that mobile acquisition is closely linked with music acquisition, and the more attractive the mobile, the more attractive is the exercise of listening to music. Rajiv purchased a mobile phone that was heavily advertised as a music-listening device. Suresh was influenced by how easily his kids were able to use the mobile phone interface for listening to music. Prakash values the portability of this personal battery-powered entertainment device.

In line with my observations, Prakash also mentioned that in the villages, Chinese phones are commonly used. These phones come without warranty, are notorious for breaking down within months of their purchase, and are therefore cheaper. However, a critical factor that feeds their popularity is their speakers. According to Prakash, "these phones have 8-10 speakers on them. . . they are loud enough for the whole village." He went on to add that it was common for him or his friends to direct verbal abuse at someone by calling them a 'China mobile' if they came across as too loud or obnoxious.

Here we also see a reference to the practice of listening collectively to music. On the one hand, as Bull (2005) reports, the phone offers its owner personalized control over where and when one listens to music (on the move, in gatherings with friends, at home over dinner, just before going to bed). On the other hand, it allows the user a collective listening experience with friends and/or family. This affordance allows these users to simulate the gatherings that they typically congregate in to listen to live music performances, as we saw in Chapter 2.

Sharing Practices

In addition to allowing these shared listening experiences, the material nature of mobile media also impacts sharing practices. As reported by Smyth et al. (2010) as well, Bluetooth transfers and exchanges are conducted frequently to obtain music and other multimedia content from friends, and occasionally strangers. Sandeep, a 27-year-old in Bikaner who collects and listens to music on his mobile extensively, shared:

> "The biggest thing about the mobile is Bluetooth. 'Give and take' takes place seamlessly and all the time. Everyone knows Bluetooth. If someone asks me for a song, it is up to me to decide if I want to give it to him or not. If I want something from him, I will give him the song he wants."

Another young adult from Bikaner shared his experience with conducting music transfers:

> "I often go to the market. People come to these shops when I am sitting there. People are very fond of music. It plays all the time. If I hear something and think this is a good song, then I say 'friend, give it to me.' He gives it to me via Bluetooth. . . . Whoever has multimedia has Bluetooth. If they don't know how to use it, I take it and teach them how to do a transfer."

In the traditional case of cassettes and CDs, 'give and take' would involve a physical exchange. Something would have to be lost in the process, by one or both parties, for it to also be gained. With the digital representation of mobile media, however, the giver does not lose while the taker still gains. As long as a single party is aware of the mechanism of conducting a transfer, songs can be transferred seamlessly and without a financial cost. The material nature of the music file makes its presence felt when the size of the file is large enough to take more than a few seconds to transfer, but with songs/song videos, this is almost never the case.

Quality vs. Quantity

The size of the music file and its infinitely reproducible representation in bits can matter when it comes to building a personalized collection of music, which according to Bull's study (2005) is a considerable affordance of a mobile listening device. The ubiquitous nature of the multimedia phone as well as the ubiquitous desire to load this phone with digital music, both ease the task of building a personalized collection. With the near-zero cost of digital reproduction and the seamless process of conducting Bluetooth transfers, there is a race among users to build the best, most current, most eclectic mobile music collection within their social circle. Vijay, 24 years old from Bikaner, has a great passion for music - but more than listening, he enjoys collecting music (stored on his 4GB memory card), because his current job doesn't give him the time to listen to music as he "once used to have". We heard several accounts where, while the consumption of music would wane with the excitement of owning a mobile music device, there remained a desire to own large libraries of songs.

Somesh - a download operator in Maksi - claimed that villagers are wont to compete with each other over the number of songs they have: "Even if they listen only to 2, they want hundreds in the phone." He stated a typical exchange as follows:

> Villager #1: "What do you have on your mobile?"
> Villager #2: "I have 300 songs on my mobile!"
> Villager #3: "That's it? I have 600 songs on mine!"

Somesh's customers prefer low-quality MP3s and low-resolution 3GP videos to high quality MP4 files so they can cram more content onto their memory cards, exhibiting thus an awareness of the material form of this music and the fact that it occupies space, which is in limited supply. Here I confirm the findings of Oeldorf-Hirsch et al. (2012) who show that users are indeed willing to compromise on quality for quantity.

"Too Much. Enough."

I observed that the acquisition of large media libraries may have little to do with the frequency of listening. I found that it has little to do with the appreciation of music as well. Although recorded music has never before been as widely affordable and accessible, appreciation for it is said to be suffering. With ready access to Bollywood film music, listeners are eager to obtain the latest soundtrack on their phones and listen to its songs on repeat until the next major soundtrack is released (typically within a week, I was told). I heard from several of our respondents that the "life of music" has gone down. Maheshji said it has become "too much...enough." He spoke of the obliteration of the singer's identity, as listeners focus on the music alone. He asked us:

> "Have you heard the song *Munni Badnaam Hui*? Do you know who sang it? The song is the biggest hit of the year, but ask anyone - no one knows who sang it. (Even I don't know who sang it.)"

New soundtracks are released at a pace that makes it hard for listeners to keep track of the singers or the album. This was reflected also in the obscure filenames that we found, while conducting a survey of mobile phone data to see what kind of mobile media was being consumed, e.g. "j.mp3", "djmazaa.mp3", etc. "With so many new songs available every week," Maheshji said, "only a few songs become popular...others flow away like rainwater."

Rajan, a download operator in Maksi, laughed at us when we asked him if his customers voiced an interest in knowing whose music they were listening to. He told us that his customers were either illiterate or ignorant by choice: "Either they don't know how to read, or they don't want to read." According to him, they only listened to the music (going "next [song to] next [song to] next") and did not care to identify the singer or album. Music, according to Rajan, is a "thing to use and forget, not a work of art anymore." This lessened appreciation for music in the mobile age came across as one of the notable consequences of its material form.

Common Perceptions

Having discussed the wide affordability and accessibility of digital music, I now shift focus to the perceptions of my respondents about the proliferation of this music and their understanding of 'piracy', both in the context of physical media such as audio cassettes and CDs and in the context of non-physical digital media. While they had no trouble answering what the piracy of cassettes and CDs meant, the piracy of digital media was a grey area for many and often those who were consuming pirated content were not aware that they were doing so.

The respondents had a strong association between piracy and "poor quality" (whereas pirated digital media is commonly of high-quality as well). This association may have stemmed from the fact that 'cheaper' is typically associated with 'poor quality' and pirated music is cheaper. Below is a conversation I had with Yogesh - a 20 year-old avid music listener in Bikaner:

> Q: "What do you think piracy is?"
> A: "What I like to hear. . . the quality is really poor."
> Q: "How do you get good quality, then?"
> A: "Filter out. I listen to 10 [duplicate] songs, and if I don't like the quality of something I want to hear, I go buy the original."
> Q: "Is the original available?"
> A: "Yes. Sometimes. But in very few places and even less than before."

From Yogesh's account we also note that while the availability of low-quality recordings has gone up, the available of high-quality recordings has gone down. Original versions were always more expensive, but they often also occupy more storage space. By reducing the sampling rate, download operators such as Sonesh are able to (store and) sell more music. Original copies of CDs, DVDs and other content are no longer available in these non-urban, more remote parts of India.

Using GPRS for free music downloads appeared to create more confusion, I found. Mukesh, 23 years-old, one of the few GPRS users in the village of Luniyakhedi (near Maksi), believed that he was paying for all the music he downloaded online. Mukesh's understanding was that since he paid his GPRS provider a monthly fee for accessing 1GB of downloaded data, it was the provider's "responsibility to pay the Internet" for the songs he downloaded up to 1GB:

> "They [the Internet provider] should pay for the songs since I am using the Internet through them."

Another common perception emerging from the materiality of mobile media was with regards to the emission of 'radioactive rays' from the mobile phone, which affect the brain. Several of my respondents believed that the prolonged use of the mobile phone (whether for talking or for listening to music) affected the natural environment as well:

"The waves are not eliminated, nor are they destroyed. They keep circling in the atmosphere. The practice of listening to music on the mobile generates sound pollution. ...Earlier, we could hear the birds chirping. The chirping has gone down a lot. There used to be a small bird - *Gauraiya*. It is disappearing day by day due to these mobile radioactive emissions."

3.5   The Download Market

So far, I have examined the role of the mobile phone in the current practice of music production, reproduction, and reception. I now turn my attention to the sociotechnical configurations that result. Having talked about the mobile medium, its affordances, adoption, and use, I will now discuss the download economy that has emerged as a consequence of the changing materiality of recorded music.

The Jain Market in Bikaner, also widely recognized as the download market, lies just outside the old city walls. It is comprised of a two-storeyed building, with one long corridor of shops on both levels. At the entrance off the main street, one set of stairs leads to the upper level while the other goes down to the lower level. Each of these levels houses around 20-30 full-length multi-purpose shops selling hardware, shoes, clothes, etc. while the walkway in-between is occupied by a series of portable chairs and tables. These are for the download operators (as they are popularly called) who pay the shop-owners approximately INR 250-400 ($5-8) on a daily basis to set up their laptops and run their temporary one-man businesses outside these permanent shops.

From 11am to 8pm, Jain Market remains loud and congested. It is filled with customers - from Bikaner as well as around 20 neighboring villages, whose residents are easy to identify in their traditional white farmer's garb. This market is the local hub for mobile phone purchase and repairs, and also for obtaining downloads of audio/video content, wallpaper images, games, software, etc. onto mobile phone memory cards. The makeshift arrangements and small daily fee are indicative of the minimal overhead required to set up this business. Download operators do not have the same set-up daily, and at any given time, only around half of them may be present. Several of them are students, pursuing correspondence courses and conducting this business on the side. In the past there has been some police trouble due to sudden raids looking into illegal operations (such as their pirate practice). As a result, the mere hint of a police officer in the vicinity is enough to make the tables and chairs quickly disappear. The operators are gone without a trace and the download economy is temporarily non-existent.

Prior examination of similar mobile download practices in Indian markets (Smyth et al., 2010; Kumar et al., 2011) discusses the manner in which customers purchase memory card downloads of pirated content from the operators. In Bikaner and Maksi, this business has

been around for 5-7 years, catering to an ever-expanding local mobile phone customer base. At one of the Jain Market businesses I visited, the owner succinctly expressed the rising popularity of this marketplace:

> "The price of mobiles has gone down, so the customers have gone up. Earlier memory card phones were too expensive. Now all phones have a memory card."

The demand for entertainment media thus continues to rise. On the supply side, there are more download operators today than ever before. Even in a nondescript rural town like Maksi, the number has tripled (from 10 in 2009 to 30 in 2012). With increased competition among the suppliers, prices have also dropped considerably. The operator who used to charge INR 80-100 ($1.6-2) per GB in 2009 now charges INR 30-40 per GB ($0.6-0.8).

Specialization of Roles

I briefly discuss the factors that enable this download economy from the perspective of the suppliers of this media. The music collection that the download operators base their businesses on must be procured, stored, transferred to memory cards, and also augmented. Here I build on prior work.

Almost all download operators I interviewed - in Bikaner and Maksi - have access to a wide variety of multimedia content. While earlier the major operators would obtain their multimedia libraries from content suppliers in nearby cities (Kumar et al., 2011), easier and affordable Internet access has enabled them to obtain more of their libraries through online downloads (although regional content is still primarily procured through CDs produced and sold locally). Those operating on a smaller scale (e.g. out of their homes with a laptop) continue to source libraries from larger businesses operated by friends or family.

Rahul is 34 years old and was one of the first adopters of a mobile phone in his village, approximately 10 years ago. He comes from an educated and relatively affluent background (his home is the only concrete, or *pukka*, house in the village), and has keenly followed the growth of the mobile market. He believes that the skills required to operate a mobile downloads business are minimal:

> "50% of the download operators [in Maksi] don't know how to download anything; don't know how to put software in phones. Different mobile phones have different formats. There is an anti-virus software for the mobile. There are many more softwares. They don't know all these details."

Despite the lack of knowledge, however, they are reportedly successful in operating their business. In addition, they are quickly learning - for there is a rise in the number of courses being offered on mobile downloads and repairs (we found posters to this effect plastered all over the market areas of Maksi and Bikaner), and these appear to be the gateways for most

operators into this market. Rajesh, an operator in Maksi, shared the history of his shop with us:

> "First we sold SIMs. Then we sold balance. Then mobiles entered the [local] market, so we started selling mobiles. My brother went to Ujjain for a year's training to learn how to do mobile repairs. He got a diploma. Then we expanded our mobile business."

What lies ahead?

Several download operators were of the opinion that the mobile downloads business had peaked, not because the demand for recorded music had suffered, they said, but because consumers were now able to find cheaper means to meet their media needs, for "the net is everywhere". As GPRS becomes ubiquitous and data plans continue to lower their prices, more and more users will be able to access the Internet on their mobile phones. Not only, numerous Mobile Value Added Services (MVAS) aim to cater to the growing demand for mobile media with innovative business plans that target the low-income consumer. Solanki, a 23-year-old download operator in Bikaner said:

> "In the last one year, the market of downloads has gone to half. Company is giving 3G, so you can access the net and download songs from there."

Although it is rare at present to find mobile Internet users in the margins I looked at, the number is steadily rising. The mobile phone is increasingly becoming the youth's gateway to the Internet. I mentioned Mukesh from Luniyakhedi who downloads music from various online sources. An advantage that stems from Internet downloads is that listeners find themselves empowered to select the music they wish to own, while download operators often impose their own assortments on their customers. Suresh - a 27-year old male who regularly listens to music on his mobile phone - told me about his transition to the Internet:

> "When I first got a memory card, I got a [music] download at the shop. It was a 1GB card. He [the operator] filled up the card according to his whim. 75-80% of the songs were useless. I hit delete-delete-delete. Then later, I got a computer, I got the net installed. Now I can get the songs I want on my phone."

The majority of my respondents, however, still found the process of conducting their own mobile downloads a challenge, such as 32-year old Vinay in Bikaner, who goes to Magna Mobile (a rare permanent download shop) 2-3 times in a month. In addition to purchasing music, if there is a CD of a particular song he desires, e.g. a Rajasthani folk song, he takes it to Magna Mobile and has it downloaded onto his mobile.

Music and Services

The download business is not about music provision alone. Other services are sometimes offered free of cost as well. A 70+ year-old customer I interviewed in a shop I visited in Maksi told me that Raju, the 'boy' who ran the business was "good to him and resolved all his mobile related problems". Whether it was an accidentally activated caller tune, difficulty using the phone instrument, or the download of devotional music of his choice, Raju assisted the gentleman with all his mobile needs, allowing him to pay as he liked for this service. Indeed, in an increasingly competitive download market, improved customer service and carefully fostered relationships have become primary differentiators, particularly because the users I study are new adopters of technology, and lack the technological expertise that is becoming second nature to their urban counterparts. Ajay, a Maksi operator, shared his opinion:

> "If we treat the customer well, ask them what they want, what they like, he/she will come back to us. Whatever the customer wants to know, we have to tell them. Whatever he wants to see, we have to show. This is how we increased our number of customers."

Legality and Enforcement

Having examined earlier how the listeners perceive piracy, we now look at piracy practice from the perspective of the distributors - a key aspect of the sociotechnical configuration that is a result of the evolving materiality of music. A mobile shop I visited in Bikaner had stopped dealing in downloads 6-7 months prior to my visit. The owner informed us that a recording company representative had visited them, demanding an arbitrary yearly flat fee of INR 10,000 ($250) if the shop sold any pirated copies of his company's songs. He added, "We cannot afford to pay such a large yearly sum to every recording company. It is better to quit this business." They focus now on mobile phone sales and repairs instead. Police arrests of download operators do take place but are infrequent and done primarily with the intent of "creating a feeling of terror among the download operators," as we were told by Ramesh, who used to work for a download shop. He explained the phenomenon of 'setting' that controls the dynamic between the cops and the operators:

> "This 'setting' affair is intriguing. None of the download shops are doing legal business. Whenever the recording companies ask the local police to do a raid, the police and the download centers agree on some 'give and take' and 'set' the affair. An arrest takes place only when the operator does not agree on a deal with the police."

The larger, permanent shops (outside Jain Market in Bikaner) have an understanding or arrangement with the police that enables them to operate without fear. The Jain Market

operators on the other hand, in their makeshift establishments (as described above), experience more arrests and court cases. I interviewed Raja - a download operator in Jain Market who shared with us the story of his arrest, court case, and acquittal. I summarize this below:

> "A man came from the 'companies' and said he had been authorized to have me arrested in violation of the Copyright Act of India (Government of India, 1999). He said the songs I was putting into the mobile from the Internet could not be used for commercial purposes. I was in jail for one night, then got bail. They did a court case on me. This was 11 months ago. In court, the judge asked the cop: 'Take out your mobile. Do you have songs on it?' Of course the cop had songs on it. The judge told the cop that he was a criminal too and dismissed the case."

I use this example to illustrate, in closing, that mobile media distribution has such an extensive reach that it is increasingly being accepted into the social fabric, circumventing legality. Moreover, in the relatively remote sites of Bikaner and Maksi, there is also little compassion or understanding for losses incurred by distant recording companies.

3.6   Discussion

While recent HCI efforts highlight the materiality of digital information, I extend this discourse with a discussion of the changing materiality of digital information by offering an ethnographic study of music practices in small-town India. HCI research shows that it is important for designers and researchers to be sensitive to the affordances of the material. I stress, in addition, the importance of focusing on the affordances of varied media to understand how material differences impact cultural adoption and practice. For instance, digital reproduction enables the deliberate loss of information (by down-sampling) in ways that analog media did not, and this affordance allows our study participants to support their social and aesthetic preferences as they pick quantity over quality, a tradeoff that was previously inaccessible to them. This becomes particularly relevant when we note that the material culture of music consumption and sharing in the West evolved differently, where widespread Internet preceded the memory card.

This research aims also to further develop the analytic lens of materiality. Dourish & Mazmanian (2011) have proposed five conceptualizations of the materiality of digital information - the material culture of digital goods, transformative materiality of digital networks, material conditions of IT production, consequential materiality of information metaphors, and materiality of information representation. My findings fit these categories, but also show that the categories share blurred boundaries, and in fact continually act on one another. For instance, the economics of rural mobile phone coverage and the affordability of mobile devices make them increasingly ubiquitous, also leading them to acquire symbolic meaning as social status indicators. This, in turn, leads to the emergence of particular metaphors (such

as 'China mobile'). Focusing not just on these categories in isolation, therefore, but actually observing how they relate to and build upon each other can be helpful for understanding sociotechnical phenomena and technology adoption, as I demonstrate with my research.

In underserved regions like the ones I examine, where technology users are subject to various socioeconomic constraints, the materiality lens allows me to analyze their navigation of these constraints towards appropriating technology to address their needs. This ethnography not only describes the music practices of individuals from these parts, but also highlights what these practices are not, in that they differ starkly from music practices in the West that the HCI domain has traditionally focused on, and focus on different affordances of the material. As the field of HCI for Development (HCI4D) grows, designers and researchers in the developed world stand to gain from exposure to work that emphasizes how different users and user preferences are in different parts of the globe. More attention to these differences will help HCI researchers devise better-fitting designs.

3.7 Conclusion

Building on recent HCI research that seeks to expose the trope of immateriality and highlight the material nature of digital information, I examined the materiality of digital media and information technology in the context of mobile music production, reproduction, and reception in small town India. Through an ethnographic study of the recent adoption and use of mobile technology in this infrastructure-challenged terrain, I studied the *aspects* of the changing materiality of digital music, the *effects* of this materiality on media consumption and sharing practices, also investigating the sociotechnical configurations that result as a consequence.

Chapter 4

The Mobile Media Actor-Network

"A technological project is not in a context; it gives itself a context, or sometimes does not give itself one. What is required is not to 'replace projects in their context,' as the foolish expression goes, but to study the way the project is contextualized or decontextualized. To do that, the rigid, stuffy word 'context' has to be replaced by the supple, friendly word 'network'." (Latour, 1996:115)

Building on a growing body of research on new media use in the developing world, this chapter describes the vast, growing mobile media consumption culture in urban India that relies on the ubiquity of informal socioeconomic practices for reproducing, sharing, and distributing pirated digital media. Using an Actor-Network Theory (ANT) based approach, I show how the practice of piracy not only fuels media consumption, but also drives further technology adoption and promotes digital literacy. To do this, I first uncover the role of piracy as a legitimate actor that brings new media capability to underserved communities and reveal the heterogeneous character of the pirated mobile media distribution and consumption infrastructure in India. I then emphasize the benefits of an ANT-based theory-driven analysis to research efforts in this domain. In particular, ANT enables me to one, draw attention to the ties in the pirate media network that facilitate the increased *decentralization* of piracy in India; two, highlight the progressive transition from the *outsourcing* to the *self-sourcing* of users' media needs as this network evolves; and three, recognize the agency of human *and non-human* entities in this inherently sociotechnical ecosystem.

4.1 Introduction

As information and communication technologies (ICTs) rapidly penetrate underserved, infrastructure-challenged communities of the developing world, new sociotechnical systems emerge, introducing new patterns of technology access, interface, and use. This change also creates a need for research to develop new, evolved approaches to study and design for these sociotechnical systems. My larger objective, through this chapter, is to inform the process of design for a growing population of marginal users who are newly learning to own ICTs

and adapt them to fulfill their needs.

I examine the mobile media culture of accessing, sharing, and distributing pirated digital media via mobile chip downloads. This is a widespread culture that relies significantly on illegal socioeconomic practices. I aim to be agnostic towards the legality of these practices, adopting a neutral stance towards the term 'piracy' to refer to the regular procurement and consumption of media in violation of copyright laws (sans the negative connotation it otherwise carries). This allows me to uncover innovative means of media procurement and dissemination, increasingly becoming ubiquitous in socioeconomic settings where original media remains largely inaccessible and unaffordable. Thus I highlight technology practices of users in underserved, marginal communities of the developing world. My contributions in this chapter are twofold. First, I analyze the heterogeneous character of pirated mobile media production, distribution, and consumption infrastructures in urban India. Second, I emphasize the benefits of a theory-driven analysis to research efforts that examine technology adoption in parts of the developing world.

The increasingly ubiquitous mobile phone draws upon a rich infrastructure of piracy to bring significant media access to the low-income consumer historically excluded from accessing the more expensive, original versions of this media. By studying infrastructures of piracy in metropolitan India, the down markets of New Delhi, Bangalore, and Hyderabad, I focus on mechanisms for media access and distribution in a resource-constrained environment and the growing consumption of this media among low-income users via multimedia- and Internet-enabled mobile phones. I also highlight how these entertainment-driven practices serve to promote digital literacy and expand technology adoption.

To study these dynamics, I employ Actor-Network Theory (ANT), an approach that was developed to analyze the interplay between technology and society by balancing the approaches of technological determinism and social determinism (Latour, 2005). ANT treats everything in the social and natural worlds as "a continuously generated effect of the webs of relations within which they are located" (Law, 2009), allowing me to generate narratives that trace the paths of these webs. In my study of the pirate media actor-network in urban India, ANT highlights the interactions between consumers and distributors of pirate media and how these cause the network to form, grow, and evolve.

In particular, using ANT enables me to one, draw attention to the ties in the pirate media network that facilitate the increased *decentralization* of piracy in India; two, highlight the progressive transition from the *outsourcing* to the *self-sourcing* of users' media needs as this network evolves; and three, recognize the agency of human *and non-human* entities in this inherently sociotechnical ecosystem, thereby also ascribing legitimacy to the pirate infrastructures largely overlooked by mainstream academic research. Here I use ethnographic data from in-person narratives to situate the pirate media actor-network and its evolution. Hence, I attempt to facilitate a discussion between ANT, ethnographic methods, and the

field of HCI.

This chapter is structured as follows: the next section provides a review of relevant literature on ANT in HCI, piracy and the informal economy, and technology adoption in developing regions. I then describe my research methodology, before reporting my findings in an ANT framework. Finally, I discuss my findings and conclude.

4.2   Related Work

The Actor-Network Theory framework has made occasional appearances in HCI literature in the context of participatory design (Gartner & Wagner, 1996; De Paula & Director-Fischer, 2004), as a rhetorical device to gauge the disciplinary turn in HCI (Taylor, 2011), and in the realm of information systems (Hanseth et al., 2004). The concept of agency, intimately linked with ANT, is also popular with the design community, and recent work explores the performative role of design materials in the unfolding of design activity (Tholander et al., 2012; Ahearn, 2001). These contributions are part of a larger body of literature that aims to better understand sociotechnical systems, also offering alternative versions of the ANT framework to argue for a broader adoption of this approach (Horst & Miller, 2006). I aim to view and capture technology, with its diverse material properties, as it comes into being through engagement with the human world. In particular, I am inspired by the view that technology ". . . may be materialized by users (and other actors) who define novel ways of relating it to the other entities in their life world. . . " (Kraal et al., 2011)[1]. This view specifically demands an *in situ* analysis to research technology as it unfolds in the hands of the user. By using ethnographic methods, I uncover the processes of technology adoption within infrastructural constraints.

The link between piracy and media practices, especially in the context of emerging markets, is relatively new, although media piracy has long been present in contemporary global contexts of digital media consumption[2]. Sundaram's monumental research on Delhi markets sheds light on the generation and consolidation of pirate networks of electronic product distribution that 'bleed' into other parts of the city "which is a coordinate of media markets, small software and hardware factories, and local shops that interact with customers" (2010). Ilahiane & Sherry's (2008) focus on the 'articulate entrepreneur' as the 'processing conduit' for global markets draws attention to the rise of informal actors in emerging markets and the nature of their complex business relationships. This research is particularly inspired by the notions of 'bleeding networking culture' and the 'articulate entrepreneur' (Sundaram,

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[1]For the reader new to ANT, Kraal et al. (2011) provide a helpful description of the framework and offer suggestions for its use.

[2]Larkin (2008) studies media piracy in Nigeria, viewing pirate infrastructure as the totality of technical and cultural systems that create institutionalized structures for circulation of different kinds of goods. Karaganis et al. (2011) provide an overview of pirate practices in various developing countries.

2010). Building on the strengths of this existing literature, I cast a specific theoretical lens on media piracy for two reasons. First, I lend rigor to the understanding of the generation and consolidation of pirate media networks. Second, I identify key actors and their relations in the formation and evolution of these networks.

4.3 Methodology

To achieve an in-depth understanding of mobile media consumption and distribution, I conducted open-ended and semi-structured interviews, observations of mobile phone businesses and their operations, and baseline surveys of existing mobile use trends. This research study took place in the Indian metropolises of New Delhi, Bangalore, and Hyderabad, all of which boast an active culture of mobile media piracy. In preliminary investigations, I observed and interacted with mobile businesses to understand their business practices, clientele, and media management practices for the content procured and distributed. These provided a contextual basis for identifying suitable respondents - shop-owners, assistants, media consumers, and law-enforcers - for the next round of in-depth and focused interviews, each lasting approximately 1-3 hours. Some of these respondents emerged as key informants and field guides, providing valuable insights into pirate media business practices. Having obtained a broad understanding of the mobile business ecology, I narrowed my focus to understand the primary players and operative processes of procuring and distributing pirate media. I paid special attention to practices aimed at acquiring skills for media procurement and transfer.

At each site, I sought two kinds of respondents: youth who actively consume mobile media, and mobile shop-owners, assistants, or other individuals engaged in the sale or distribution of mobile media. The respondents - who were explicitly and openly informed of my research objectives - came from diverse backgrounds, but from low-income earning families, earning on average INR 10,000 ($200) per month. Many had migrated from rural parts of the country - with or without their families - in search of improved livelihoods. While some of the respondents were migrant workers - electricians, carpenters, or laborers, others were students who had moved to the city for a better education - and lived with relatives who were migrant workers. A majority of the shop-owners I interviewed had also migrated from their villages in search of business opportunities. All the consumers I interviewed were male and in the 18-24 age group, as were the shop assistants. The shop-owners I spoke to spanned a wider age group (18-40), and were also all male. The lack of women in the sample was not by design, but may be attributed to the use of snowball sampling via male respondents, in addition to being indicative of an existing gender bias in the participation in the exchange and/or circulation of pirated media.

In Bangalore, I visited 18 mobile shops across Gandhi Bazaar, Commercial Street, and Whitefield markets, where I engaged in extensive conversation with the shop-owners and

assistants, and observed their shop-keeping practices. I also interviewed 10 mobile media consumers in these locations who, as mentioned above, were migrant workers. In Hafeezpet, a slum near the affluent IT parks of Hyderabad, I interviewed 7 users of the mobile Internet, some of who had morphed into expert users of pirate web sites. These informants were identified from a larger ethnographic project on urban slums and ICT adoption. In Delhi, I visited Sewa Nagar and Meharchand markets, both of which cater largely to the migrant population nearby, before exploring the pirate hubs of Ghaffar Market and Palika Bazar in addition. I visited more than 20 mobile shops in these markets, and interviewed 20-25 consumers of mobile media. My snowball sampling in Delhi commenced from the shop assistants and led me to other college-going youth who were active consumers of mobile media.

4.4 ANT

The Actor-Network Theory framework was developed to examine the alignment of interests of the social and the technical to see how they impose worlds upon each other and to describe the dynamics and internal structures of actor-worlds (Callon, 1986). Over the years, slightly different ANT approaches have evolved to address sociotechnical configurations in varied domains (Law, 2009). In this research, I draw upon Callon's *sociology of translation*, because this suitably highlights, in the case of the pirate media network, how the consumers and suppliers of mobile media and the mobile phone interact to result in a thriving actor-network. In this section, I describe the key aspects that motivate my ANT analysis.

Each actor of an actor-network may be expanded into a new actor-network, and likewise - actor-networks may be collapsed into a single actor. ANT thus offers a uniform framework "regardless of the unit of analysis" (Monteiro, 2000). This becomes particularly relevant to my study of piracy as I accord equal strength of analysis to a plethora of actors in pirate networks. The mobile phone kindles an actor-network in itself, packaging hardware, software, plans and pricing into its affordances. The mobile shop, in turn, generates an actor-network that includes a business element for the shop to remain in existence and a technological element that determines the extent of services it is able to provide to its customers.

Although ANT ascribes symmetry and equal agency to humans and non-humans, for which it is frequently criticized (Whittle & Spicer, 2008), it does differentiate between them from the perspective of intentionality. Objects may not be empowered with intentionality or have the desire to effect a particular outcome, but they have the agency to modify a state of affairs through their availability and use, e.g. Latour's door-opener (Latour, 1998). I do not ascribe intentionality to the technology I study, but I do draw upon the agency of this technology as it acts on the users to afford particular media storage, consumption, and sharing practices[3].

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[3]It is worth noting that the ANT framework is not a theory, as Latour affirms (2005), but a framework

By eliminating the histories underlying interactions among actors and ignoring intentionality, ANT allows for a neutral analysis of this actor-network, in that it ascribes due worth to the roles fulfilled - if illegally - by the pirate actors I study. In eliminating the afore-mentioned histories, however, ANT has been criticized for its "austerity to the depicted social worlds by circumventing historical sensibilities and eschewing actor intentionality" (Burrell, 2012; Gell, 1998; Ahearn, 2001). This research attempts to redress some of this critique with the use of grounded first-person narratives. Ethnographically informed actor-networks allow me to capture the richness of a historically informed social world and contextually informed actor motivations to offset the theoretical symmetries imposed otherwise by ANT.

While I considered alternative theoretical frameworks, I found them unsuitable for analysis. For example, a materiality framework fails to capture the web of social links that ANT highlights, or affect theory, which focuses on the passion that drives technology adoption but sidelines the technology itself. Admittedly ANT has its limitations. It precludes a historical perspective and obscures the role of cultural values in driving the ubiquitous nature of media piracy. These, however, have previously been addressed by Sundaram (2010) and Manuel (1993).

4.5 Findings

The actor-network is built on the links that dictate media procurement, disbursement and consumption practices. To examine this actor-network, I follow the actors as they engage in pirated acquisition, sale, consumption, and redistribution of media. I first describe these actors and then the relations between them that result in the formation of the pirate media actor-network, also outlining the moments of translation (Callon, 1986).

The Actors

Actors are human or non-human entities that "can be endowed with interests, projects, desires, strategies, reflexes, afterthoughts, with the ability to enroll other relevant actors" (Fountain, 1999). The two main categories of human actors that emerged from this ethnographic research are of *media suppliers* and *media consumers*. I label actors as consumers or suppliers based on their dominant roles in the network. However, these labels are by no means permanent and, as the actor-network evolves, may overlap or change altogether. The media supplier meets the entertainment needs of the consumer. This is enabled, in turn, by the third category of actors - the *technology*, and most notably the mobile phone, in the absence of corrective action by the fourth category of actors - *law enforcement authorities.*

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through which to see (a part of) the world. Even if the reader is inclined to question the agency of a technological device, perhaps he/she can humor this blasphemy by shifting focus to what this view of the world affords in the context of my research.

I now describe these actors and how they originate from, are empowered by, and further perpetuate this actor-network.

The Media Supplier

The first category of actors includes *media distributors*, who provide media to consumers for financial profit, and *media entrepreneurs*, who do not sell media but proactively engage in procuring and supplying media, driven by social recognition instead.

Raju is a media distributor. He is a 20-year-old male and works as a technical assistant at Lakshmi Communications - a mobile shop[4] in Sewa Nagar Market (New Delhi). He learned to use a computer in a six-month training course and is adept at operating the shop's PC for media and software use. He transfers content from CDs, DVDs, and USB drives to the PC, organizes it into folders, and assorts it into 1GB/2GB collections that he can transfer onto the mobile phones of customers. For this he earns INR 6,000 ($100) per month. He is an avid consumer of media himself and plays song audios and videos in the background while he works. By virtue of his employment at the shop, he has free access to both regional and Bollywood content, which he enjoys. He is fond of Bhojpuri films and music, which originate from his native state of Bihar that he left 2-3 years ago for a better life.

Lakshmi Communications is run by Shankar - a 25-year-old, running a small business, who dropped out of school after eighth grade and makes decisions regarding whether to engage in the sale of pirated media or not. Shankar also hires a mobile repair assistant, who sits at a small desk in a corner with his tools, is familiar with different brands and models of mobile phones and their parts, and seemingly adept at trouble-shooting. As multiple shopkeepers in Sewa Nagar informed me - marginal users typically purchase Chinese-manufactured unbranded phones that (they know will) break down often. When this happens, the users bring back their phones for repairs to the shops where they had bought them in the first place, providing a steady and profitable source of revenue to these shops. This also helps to maintain an ongoing relationship between the shop and its customers and media is frequently part of the transaction. In addition to providing media and repair facilities, Shankar sells mobile accessories including covers, headsets, and portable speakers. He also deals in SIM cards, providing new mobile connections and recharging prepaid SIMs. By providing a host of mobile-related services, Shankar aims to ensure that the customer "does not leave [his] shop disappointed." Thus he addresses the stiff competition from the slew of mobile shops that have flooded the Sewa Nagar Market in the last 1-2 years.

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[4]The mobile shop, as mentioned earlier, is an actor-network in itself, comprising mobile phones and accessories, a technical assistant, repair assistant, a business manager and possibly others, though their roles may be combined in some cases, such as when the shop-owners have the technical expertise to generate and circulate media libraries on their own. With minor differences, the structure of this mobile shop remains the same in the cities I look at - New Delhi, Bangalore, and Hyderabad.

Figure 4.1: This sign on a mobile shop in Sewa Nagar reads "Memory card, iPod, pen drive downloading. 1GB, 2GB, 4GB (Hindi, Bhojpuri, Garhwali, MP3 Video Films)". Bhojpuri and Garhwali are the dialects spoken by most of the migrant workers in this locale.

Yousuf, on the other hand, is a *media entrepreneur* who shares various audio-visual content with friends and family and loves the social recognition he gets as a result. Yousuf, now 20, dropped out after eighth grade to manage his family's newly converted mobile shop in Hafeezpet (Hyderabad). He is passionate about all things mobile, and shows off his knowledge of various mobile parts - cameras, keyboards, speakers, etc. Like Raju, Yousuf works at a mobile shop as well, but chooses not to engage in the sale of media downloads. His response to pirate practice is shaped by a fear of having to deal with the police (and potentially shelling out hefty bribes to them) and a clouded grasp of copyright infringement laws in general. He explains:

> "The Government has made rules. If you have a system [PC], you must have a license...like a driving license...for downloading. ...The police will come and check your system. They will see if you have downloaded. There was a shop in the neighborhood. They had no license. They were downloading videos for Rs.

> 200. The police came and asked for videos and took away their system. Now the shop doesn't exist. This is why I don't sell any media."

Yousuf routinely downloads new releases onto his 2G Nokia phone. He starts the process at 1.30 a.m. when he can simultaneously download 4 movies. Each download takes 1.5-2 hours in the night, he says, while in the daytime "it is divided," each movie taking 3-4 hours. Yousuf keeps himself updated on and regularly scans pirate movie sites, downloads these movies as soon as they become available, then shares them (via Bluetooth) with his friends. Movies are more his thing than music, he says:

> "People come and ask me for songs. They say which songs they want. If I keep downloading songs for them from their lists, it will be evening before I know it. I can't spend so much time."

Yousuf proudly shares his technical knowledge with me, rendering evident his enthusiasm for media procurement and sharing. He and other media entrepreneurs I encountered indulge in piracy not for financial gain, but to have their technical expertise contribute to an elevated social status (in addition to serving their and their friends' entertainment needs). Sanjay, a 23-year-old media entrepreneur in Delhi who regularly downloads songs and movies for his friends and family, also mentioned:

> "The smile on their faces when I give them what they're looking for... that is what drives me to do this."

In this actor-network, the role that Raju plays is different from that played by Yousuf and Sanjay. The former acts as an *intermediary*, who according to Latour conveys "meaning or force without transformation: defining its inputs is enough to define its outputs" (Latour, 2005). In contrast, Yousuf and Sanjay are *mediators* who "transform, translate, distort, and modify the meaning of the elements they are supposed to carry" (Latour, 2005). Intermediaries transfer media from one device (mobile phone or PC) to another without augmenting the user's skills or technical knowledge, while the mediators transfer media to others' devices and aid them with various tasks and/or services. Raju silently conducts media transfers to address the customers' needs. His motivation is not to enable them to procure the media themselves, since his earnings depend on their dependence on him. Yousuf and Sanjay, however, have different motivations. They pride themselves on keeping the most up-to-date mobile-related information. They are familiar with the latest mobile Internet plans (which change frequently), recognize phones by their make and model as well as software and hardware, and have memorized a list of websites from where one can download movies. They selectively share this knowledge with friends and family, teaching them where from and how to download Bollywood songs, for instance. Because of the widespread demand for entertainment media, this helps them maintain an elevated status in their social circles, simultaneously enabling the transfer of skills from experts to novices.

The Media Consumer

The second category of actors is the *media consumer* who seeks pirated media for listening and viewing. I break this category down further to distinguish between two kinds of consumers. The first is the *consumer* (to keep things simple) who through his/her demand for cheap, pirated media, brings business to the supplier, while the second has evolved into an *alpha consumer*, proactively procuring content from illegal websites using the mobile Internet. The first kind of consumer generally comes from a community of technically unskilled users, seeking the mobile shop for various kinds of assistance. The mobile phone is the first and primary personal technological device they own. Be it for the recharge of prepaid mobile SIM cards, upgrading to a new mobile phone, or purchasing mobile accessories, they routinely visit mobile shops, frequently procuring a few GB of mobile downloads as a part of their transaction. This entertainment media is then consumed alone or with friends. Ravi - a 22-year-old electrician in Bangalore - is a migrant worker from Assam. Since he lives alone in Bangalore (with his family in Assam), he meets his friends in mornings and evenings when they collectively partake of Bengali music and films online on his friend Sunny's mobile phone. This daily activity makes him feel closer to home, he says. Ravi has learned about Internet downloads from Sunny, and recently spent INR 5,699 ($110) to buy a GPRS-enabled Chinese unbranded mobile phone to access the Internet: "I wanted to be able to download the most recent Salman Khan film and watch it on my mobile." He is unable to do so, however, because he claims his mobile service provider said it was impossible. He is now stuck with this phone, continuing to obtain his media from Sunny via Bluetooth. Most low-income users I interviewed came from migrant labor communities or families who had moved to the cities in search of employment. There is thus a strong demand for regional content - movies and music - that they can consume and share with friends and relatives. These users rely entirely on pirate sources for their entertainment.

The second kind of consumer, the *alpha consumer*, includes those who have evolved into savvy mobile Internet users, quickly mastering tricks along the way that help them satisfy their hunger for the latest audio visual content. Kulbhushan, an 18-year-old male from Hafeezpet (Hyderabad) has grown into a sophisticated mobile Internet user after he bought his first prepaid Internet voucher[5] two years ago. He says: "...I need my fix of Salman Khan songs and trailers...the Internet gives me quick and ready access to these...." Since then, Kulbhushan has moved on to identify the UC Browser (also documented in Rangaswamy & Cutrell, 2012) as the one that works best for him, enabling him to use gaming applications of his choice. Not only is he now an expert at browsing his mobile web, he also gives crash courses to his friends regarding "...the correct AV player from the correct web site..." and "what buttons on the phone to press for what functions...." For these consumers, the pirate web not only fulfills their daily entertainment needs but also transforms them into savvy

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[5]For my study participants, postpaid Internet plans are scarce. The mobile Internet is most commonly accessed using low-cost prepaid vouchers. The cost of these today, although carrier dependent, may be as little as $0.30 for 3 days.

Internet users able to fuel media consumption in their social network of friends.

The Technology

An integral part of the exchange between the media consumer and supplier is the third category of actors - *the technology.* I include in this category devices that enable the distribution and consumption of media, such as mobile phones, PCs, Bluetooth technology, the media clips, and the Internet and/or CDs from where this media is procured.

The agency of the mobile phone - the artifact, along with the hardware and software it encompasses - is represented by its affordances. Equipped with the ability to provide audio-visual entertainment to its user, and to render accessible (or not, as with Ravi) all the content that exists on the Internet through 2G and 3G connections, the mobile phone is an enabler of many things - especially (as mentioned above) among those for whom it is the first and only ICT device owned. Media entrepreneurs use this phone to download media from the Internet (as Yousuf and Sanjay do) and transfer it (using Bluetooth) to users like Kulbhushan, who are quickly mastering the tricks of the pirate trade. The inexpensive prepaid mobile Internet vouchers they use signal a distinct shift in the processes of media piracy, reshaping practices of media consumption and distribution.

For the media distributors who conduct mobile chip downloads for financial gain, the PC is a critical component as well. It allows faster transfers than the mobile phone, and also affords considerably more storage to cater to various customers from diverse backgrounds. Indeed the Sewa Nagar Market would not be a pirate hub were it not for the PC enabling the media business. Also critical to the network are the regional CD shops that supply the content that isn't yet available on the Internet, but cater to the demand of the local unskilled migrant labor. Of course, whether sourced from CDs or the Internet, the media clips (e.g. MP3, MP4, 3GP files) play an indispensable role in this network, since they represent the commodity that is bought, sold, exchanged, or shared.

Thus we see that the technology forms an integral component of the pirate media infrastructure, enabling the practices I examine. The increased affordability of multimedia- and Internet-enabled mobile phones and the near-zero cost of reproducing (and storing) media clips further propagate the actor-network, pushing the demand for low-cost entertainment and resulting in piracy that is more widespread than ever before.

The Law Enforcement Authorities

To enable the sale of pirated goods, it is essential that the *law enforcement authorities* ill-perform their duties. These authorities thus make up the final actors in my analysis of this actor-network. We saw in the case of Yousuf that the fear of legal action - even in light of limited awareness regarding piracy and copyright infringement - holds him back from deal-

ing in the sale of movie and song downloads. This also gives Yousuf the freedom, however, to share technical knowledge with customers who ask him for movies, without conflict of interest.

In Sewa Nagar, on the other hand, I found that the police and anti-piracy organizations (e.g. Indian Music Industry or IMI) are dormant actors, allowing the network to function by not interfering in its processes, even though it is their lawful charge to do so. Interviews with the police and IMI officials indicated that there is a combination of factors that leads to their non-interference. The problem lies both in the administrative structure of these public sector organizations and in the reportedly corrupt practices at the beat constable level. The end result is that the pirate businesses are able to operate confidently, without concern of legal disruptions. The beat constable obtains his daily 'perks' from these shops by threatening to otherwise report their illegal activity. These perks feed upwards into the police hierarchy, reducing incentives to be duty-bound. Although the IMI's charter appears to be uncompromised, they must act through the police force, but have no control over the police, and cannot ensure that appropriate action is taken, given the corrupt practices of the police.

I have highlighted the primary actors in the pirate media actor-network of urban India. The entertainment needs of the consumer are met by the media supplier, enabled by the availability of the ubiquitous and affordable mobile phone, in the absence of corrective action by the law enforcement authorities. I now focus on the ties that link these actors in the subsection below to enable the formation and evolution of the pirate media actor-network.

The Actor-Network

An actor-network is a set of heterogeneous actors who come together to form a network based on ties that afford them mutual gain. The origins of my actor-network spring from the availability of (previously inaccessible) pirated mobile media for consumption. For low-income users, original forms of media are too expensive for regular consumption, as seen in prior work (Smyth et al., 2010; Kumar et al., 2011). This limited market potential found respite when digital reproduction made media cheaper and accessible to the masses (Sundaram, 2010; Manuel, 1993). As the mobile phone became ubiquitous, it also facilitated greater consumption of this media. The actor-network represents the flow of media via a diverse set of disbursement channels, across the actors presented above. These distribution links form the surface of a set of deeper, less visible social ties. I categorize these ties as *strong* and *weak*, depending on the nature of media disbursement taking place - for commercial or non-commercial purposes, the permanence of relations, and the stakes involved for various actors[6].

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[6]The notion of 'weak' and 'strong' ties was incorporated into my actor-network to differentiate between ties that perpetuate the network and those that slowly bring it to disintegrate. The weak ties I discuss here are not related to Granovetter's (1973) conception of weak ties in social networks.

Strong Ties

In Sewa Nagar (Delhi), at the time of my study, there still existed CD/VCD/DVD shops alongside the mobile shops, providing the consumers with regional music and movies that they take to the mobile shops. Here, the media is ripped off the CD and converted to formats that can be downloaded onto the mobile phone. Indeed, regional content is key, because the clientele consists primarily of migrant workers who desire content from their native regions. The customers also act as carriers of media, as Shankar (the shop-owner of Lakshmi Communications in Sewa Nagar Market) explained:

> "If someone comes and asks for music we don't have, we tell them to go to Himachal Music [across the street] and buy the CD, which we will download onto their mobile."

Himachal Music - in turn - sends customers requesting mobile downloads to Lakshmi Communications. CDs at Himachal Music cost INR 35 ($0.70) on average. Customers buy these CDs, take them to Lakshmi Communications, and have them converted to mobile format. As part of that transaction, Lakshmi Communications keeps the digital reproduction of the CD (returning the physical CD to the customer) and charges INR 30-40 for their service. Shankar spoke of his clients and their (mostly Chinese, unbranded) mobile phones:

> "China mobiles have everything - camera, memory card, speakers.... 60 percent of our customers use the phone to listen to songs alone. This is true for those who don't have any other medium of entertainment at home. Like migrant laborers - they don't have any [television] sets. They have nothing else [but the mobile]. They figure out everything. They know they can copy from CDs. No one takes songs from the Internet. There are a lot of people who do Internet downloads, but you can't do that on China mobiles. So we copy from CDs, convert to 3GP format, and then download onto their phones. ...In music, we have Hindi, Bhojpuri, Punjabi - we have everything."

The ties in this network are relatively less volatile, due to the investment involved in setting up the CD/DVD shops that supply content, and the mobile shops that convert this content to mobile formats, maintain libraries of it, conduct downloads, and provide other mobile assistance to their clients. Here too, we see two kinds of relationships. Those between the CD suppliers and the mobile shops are supply-side relationships. By continuing to play their roles as actors in this pirate network, they are able to maintain a mutually beneficial bond. In contrast to this is the client-facing relationship between the shops and their customers. The shops aim to lock their clientele into a relationship by providing them superior customer service and fulfilling their mobile needs. While the customers are not obligated to return to the same shop, it is often in their financial interest to do so. Due to the absence of a rigid pricing structure, they are able to obtain lower rates by becoming regular customers. Although contributing to the informal economy, these ties are more formal and permanent, *stronger* than the weak ties based on non-commercial links I describe below.

Figure 4.2: A customer shops for an auxiliary speaker that he can attach to his Nokia phone for listening to music. Photo taken at a mobile shop in Sewa Nagar Market.

Weak Ties

When Yousuf downloads pirated content off the Internet, media is transferred over the Internet, which he then shares with friends and acquaintances. Social ties also govern the transfer of media in the case of Ravi, who obtains media from Sunny, sharing it with his Bengali friends - all migrant workers. I call these ties, based on social gain, weak ties. They are less permanent, with media transfers taking place in a more impromptu and volatile fashion, mostly via Bluetooth connections. Financial investments, such as in the case of setting up and maintaining a business, do not factor into these social networks. When the ties are weak, none of the actors have a measurable stake in perpetuating the exchange of pirate media. However, the weakness of the ties also encourages the actors to perform greater mediation, so as to establish greater peer-to-peer connections. For instance, Ravi's friend Sunny is the technology expert in their social group. By proactively downloading Bengali media off the Internet or streaming YouTube videos, Sunny demonstrates his expertise before his friends, augmenting their digital literacy, such that they slowly graduate towards

conducting these downloads themselves, as Ravi did. Yousuf and Sunny play the role of a mediator, transmitting technical know-how by being consumers themselves. The effect of their mediation is visible in the resulting acquisition of more advanced mobile phones by users in their social circles, expressly motivated by the desire to conduct their own downloads.

The ties that determine media disbursement, together with the human and non-human actors presented above, comprise my actor-network. The sustenance of this actor-network relies on the perpetuation of several links: the mobile shop and media entrepreneurs must have a steady source of pirated content to draw their media libraries from, and the consumers must desire this media, which must, in turn, reach them via the existing media disbursement channels discussed above. This actor-network may be considered a success or failure based on the alliances between its human and non-human actors, and the longevity of these alliances. If the alliances are long lasting, that is, if a demand for pirated media continues to exist and engage the skills of the suppliers, the network will not fail. Sustenance will be a challenge, however, if the dependence on these actors falls, and they are no longer considered useful in addressing the needs of the consumer. This is when the growth of the actor-network slows down or stops.

The Moments of Translation

Having described the formation of the actor-network and the actors themselves, I now embark on a discussion of the moments of translation (Callon, 1986) to trace the formation and evolution of this network. Translation - by which the actor-network comes into existence once the actors' interests are aligned - occurs in four stages, which I discuss below. Through an analysis of these stages, we can better understand the stability (or lack thereof) of this actor-network.

In the *problematization* stage, media suppliers introduce media and technology to novice mobile users, showing them what they can accomplish with their mobiles. As providers of media that was otherwise unavailable to the users I examine, these actors establish themselves as an *obligatory passage point* (OPP) in the network of relationships they build with the media consumers (Callon, 1986). They acquire the technical know-how necessary for procuring and transferring media, as well as for addressing other mobile-related problems. This is done with the objective of promoting long-lasting ties with the consumers who seek their assistance. They offer downloadable media for the mobile phones of the consumers, catering to the different formats of different makes of mobile phones, doing what is necessary to stay out of the law-enforcers' way or keep them placated through routine bribes.

Interessement, here, is the group of actions by which the primary actors - the media suppliers in this case - try to impose and stabilize the identity of the other actors in the actor-network. In the problematization stage, we find that these actors are aligned with the consumers, the mobile technology, and the law enforcers, in order for them to attain their

objective of distributing mobile media. In the interessement stage, they try to interest the consumers into seeking their service for acquiring media. Both the mobile shops and the media entrepreneurs try to build their technological expertise (by taking training courses, learning from friends, etc.) so as to increase the repertoire of services they provide. They also pay special attention to the media demands of their clients. They adopt different approaches, however, for addressing these demands. The distributors build up large libraries of media with old and new Bollywood content, in addition to regional content acquired from neighboring CD shops. The entrepreneurs, on the other hand, acquire media as and when requested by their select (and smaller) group of clients.

In the *enrolment* stage, a group of actors emerges, with well-defined roles and relationships. As Callon says, "to describe enrolment is thus to describe the group of multilateral negotiations, trials of strength and tricks that accompany the interessements and enable them to succeed" (1986). For the media suppliers to successfully enroll the other actors (consumers, technology, law-enforcers), the latter must accept the roles imposed by the former. Enrolment is achieved by a series of measures taken by the primary actors to secure their practice. The distributors offer their consumers a range of media services, as discussed previously. They expand their technical expertise to cover specific requirements of different kinds of phones, to enroll the technology. As for the law-enforcers who use their influence over mobile shops, they are negotiated too - as mentioned above.

In this actor-network, *mobilization* (or propagation of the network) is not fully achieved for the same reason that the network does not break down. That is, the network spawns numerous smaller networks as more and more alpha consumers begin to evolve into media entrepreneurs, albeit at varying skill levels and circles of influence. This is their act of *treason* (Callon, 1986) that causes the initial actor-network to change. I turn to the impact of this treason next.

4.6 Discussion

I organized my findings on the pirate media infrastructure in urban India using an ANT framework, identifying its actors and the ties that run between them, to understand the evolution of media practices within underserved resource-constrained communities. These findings highlight two ongoing processes that I discuss below, first from the perspective of the actor, then from the perspective of the actor-network.

Actor-Agents: Centralizing the Actor

ANT draws attention to the mobile phone, the unique technologic and economic affordances of it, and how it sustains the pirate media actor-network by becoming an agent for procuring, storing, and playing back media to the consumer at low-cost. Increasingly af-

fordable storage options (a 4GB micro-SD card roughly costs $6) conveniently host large numbers of audio and video files. These features are certainly agreeable to the functioning of this network.

Intermediaries such as Raju, financially motivated, try to engage their customers with varieties of media or improved customer service. Mediators such as Yousuf and Sanjay, on the other hand, keep themselves skilled and knowledgeable to cater to the media needs of their friends and family and thus gain a better social reputation. While the intermediaries are keen to sustain the network, the mediators are increasingly spawning an additional set of mediators through a gradual transfer of skills and knowledge. Their contribution is two-fold. First, they pull consumers away from the profit-oriented media distributor by offering them media services free of cost. Second, they gradually teach these consumers their newfound skills (*pro bono* or for favors in kind) to source their own (pirated) media through online downloads. This process is more easily attained due to the wider adoption of Internet-enabled phones and a supporting telecommunications infrastructure. Highlighting here the morphing of the alpha consumer into a media entrepreneur, that is, the graduation from *outsourcing* to *self-sourcing*, is a key contribution of ANT.

Actor-Networks: De-Centralizing the Network

The question that naturally arises is of the stability of this actor-network. No doubt the distributors, by their acquisition and disbursement of cheap and accessible media that is in high demand, are able to create and sustain a market for themselves. While there is still a supply and a demand to keep this market going, there is a change in the network resulting from the transfer of skills mentioned above. With new (more convenient and less expensive) means of goal satisfaction now available, the consumer is less likely to keep the network going. The sustenance of the network is disrupted by the emergence of consumers who now have sufficient technical expertise to acquire their own media and share it with friends. Their motivation to acquire this skill-set is in part so they may self-source their media needs, but it also originates from a desire to be seen by their friends as a 'go-to' person for their technological needs. The links in this network are thus redefined. In ANT vocabulary, while the intermediaries promote the sustenance of the actor-network, the mediators cause it to break down by spawning many more, smaller networks. The result is a *decentralization* of piracy, as the digital nature of media no longer imposes traditional channels of physical media acquisition and distribution.

ANT's unique contribution to facilitate an understanding of the pirate media actor-network is in its definition of actors - not just because it ascribes agency to mobile technology, but also because it legitimizes the role of piracy in altering media consumption by equalizing the role of media suppliers and consumers. We see, through an ANT lens, how piracy, by fulfilling non-instrumental needs of mobile users, promotes digital literacy - even among the most resource-constrained communities. This perspective is especially critical for the

HCI community studying the applications of mobile technology in the context of developing regions, as it highlights one major actor that drives mobile adoption and diffusion.

4.7 Conclusion

The field of HCI is increasingly pushing its traditional boundaries as it engages with technologically motivated developmental efforts in underserved, resource-constrained regions. For the success of these efforts, it is critical to understand how users in these regions interact with and adopt technology, and the factors - both social and technical - that play a role in this adoption. My research contributes to these efforts by examining a vast, growing mobile media consumption culture in an infrastructure-challenged, urban Indian context. By combining an Actor-Network Theory (ANT) approach with ethnographic methods to analyze this culture, I aim to provide a deeper understanding of the agency of mobile technologies, media suppliers and consumers, which sustain widespread informal socioeconomic practices for reproducing, sharing, and distributing digital media.

The lens of piracy offers greater insight into technology practices by allowing me to uncover, via ANT, the progressive transition from the outsourcing to the self-sourcing of media, as the transfer of knowledge and skills from experts to novices (motivated by social recognition) makes mobile users sufficiently digitally literate to browse for, download, consume, and share their own media. The emerging media entrepreneurs slowly gain mastery over today's devices and become autonomous with their technological needs. They break away from their dependence on the media suppliers, bringing other consumers to do so as well, fulfilling Latour's definition of *mediation* (2005). They are also the forces of treason that result in the fragmentation of the actor-network I study into smaller networks, operating on the basis of social and not commercially motivated ties, progressing steadily towards a decentralized pirate media infrastructure. The motivating forces, as uncovered by my ethnographic findings, are of increased self-reliance, availability of a more suitably tailored assortment of media, and of course the zero cost. Thus I emphasize the role of piracy in bringing basic, or occasionally more sophisticated, ICT capability to underserved communities. This finding highlights the long-term constructive impact of media consumption in particular and non-instrumental uses of technology overall.

In a world where the social and technical are increasingly becoming intertwined, my aim through this research is also to introduce ANT to the HCI community in a cohesive, digestible format that will aid future efforts. Additionally, I demonstrate how ANT can inform future explorations in HCI research. The unique contributions of ANT enabled me to view key aspects of the pirate media network and its practices, allowing for a superior understanding of the emerging mobile culture in urban India in particular.

Chapter 5

Social Media and Self-Empowerment

> "There is no such thing as one Facebook from the perspective of cultural relativity. Facebook is only the aggregate of its regional and particular usage."
> (Miller, 2011:163)

This chapter documents my findings from an examination of the adoption and use of Facebook among urban Indian youth from resource-challenged backgrounds. Mobile-centric use of the Internet is widely prevalent here as GPRS-enabled mobile phones and data plans become increasingly affordable. Youth are the lead adopters of these new technologies, and often the first generation of Internet users in these communities. Since parents lack the education and technical skills to effectively regulate the Internet practices of their children, the Internet becomes an unmediated space, breaking down traditional social barriers to forging identities and relationships. My findings uncover the factors that motivate these youth to engage with the Facebook platform as they swiftly overcome linguistic challenges and their lack of technical expertise. I discuss how, in a heavily class- and caste-based society, these users seek to carve out a new and improved identity for themselves that allows them to escape virtually from their sociocultural restrictions and participate as legitimate members of a global community. I also highlight the complex ways in which they navigate between fraudulent and genuine representations of themselves, as they acquire 'friends', play games, articulate thoughts and opinions, and negotiate technological hurdles.

5.1   Introduction

New media research has traditionally focused on predominantly white regions of adoption and use. As new media technologies become more affordable, however, their penetration in the global south has been widespread. This chapter draws attention to the new media practices of marginal users in a developing region by looking through the lens of the 'regional and particular usage' of Facebook (Miller, 2011). In doing so, this chapter aims to go beyond the technology itself and shed light on Facebook's *affordances*, wherein their perception is determined "by the culture, social setting, experience and intentions" (Gaver, 1991) of the

users[1]. Eighty percent of Facebook users reside outside the US and developing countries such as India, Indonesia, and Brazil have the second-, third-, and fourth-largest number of Facebook users in the world (socialbakers.com, 2011). However, very little attention has been given to the practices of these subscribers thus far, as researchers have focused primarily on Facebook practices within North America and Europe.

In this chapter, I investigate Facebook activity among youth from resource-challenged backgrounds in urban India. Shared ownership of a computer is a luxury in their communities and mobile phones (including Internet-enabled phones) are ubiquitous. These youth are literate but not conversant in English, which is the language of the State, of the rich, and of the Internet. Despite the prevalent class and caste differences however, they make up a dynamic group of individuals who have the agency to engage with and innovate around emerging new media technologies, instead of remaining passive beneficiaries of the development objectives of the State and aid organizations. These engagements and innovations are a recent phenomenon - a result of the increasing penetration of mobile technology in resource-challenged parts of the country. As mobile devices become more advanced and more affordable, they make available to the masses a new means of interacting with the world, Facebook being one such. This chapter seeks to provide a rich, ethnographically-inspired understanding of a unique stream of new and potential Facebook users emerging from a large and rapidly expanding group of new technology adopters for whom the mobile phone is the primary means of navigating the Internet. It also examines how these youth proactively use Facebook to create a transnational identity for themselves, and how Facebook offers democratized access to those who have thus far been excluded from the process of globalization.

There is a general assumption that these low-income, marginal users would (or *should*) choose to capitalize on media technologies for virtuous or pragmatic purposes. According to Ganesh, "the diverse ways in which the poor and the marginalized use media technologies in their everyday lives for social networking, entertainment, . . . and to express and experience their sexuality, relationships, pleasure and intimacy in ways that could also be considered empowering" have thus far been ignored (2010). In this chapter, I show that some of these ways are indeed empowering. Thus, I push for going beyond a needs-driven view of new media use and examining how these users might lead themselves towards self-empowerment. As Freire argued, "development can only be achieved when humans are 'beings for themselves', when they possess their own decision-making powers. . ." (1972; cited in Bailur, 2007). This chapter is an effort towards seeing marginal populations as *beings for themselves* and agents of development, as they proactively make decisions towards integrating new media technologies into their daily lives.

This chapter thus situates itself in the larger context of the development discourse,

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[1]I use Gaver's meaning of 'affordances' here to refer to properties of the Facebook environment and how these are perceived by the users I study.

wherein a large number of technology projects are critiqued to be stemming from 'colonial' computing inclinations (Dourish & Mainwaring, 2012). Traditionally, technology has been limited in its spread and impact, but the rapid penetration of affordable mobile technology in remote regions in the global south offers a compelling case for researching its adoption in these parts. Recent Information and Communication Technology (ICT) research initiatives focusing on developing regions have drawn attention to diverse technological initiatives but have largely been embedded in a socioeconomic focus, leaving new media adoption and use relatively unexplored. Leisure-driven use of technologies such as Facebook has not been examined in the context of this development discourse.

This chapter is structured as follows. The next section provides a review of relevant literature, particularly on Facebook, social networking, and mobile practices in the developing world. I then introduce the notions of *aspirations*, *avenues*, and *agency* that frame my research. In the following sections, I describe my research methodology and findings, before discussing the key takeaways of my research. I conclude with suggestions for future research in this domain.

5.2 Related Work

Caers et al. recently published a comprehensive review of the literature on Facebook in the economic and psychological domain (Caers et al., 2013), also highlighting the gaps that remain to be filled. Research on Facebook use in a non-American, non-European context is one of them. Miller addresses this gap with a comprehensive ethnographic account of Facebook practices in Trinidad (2011). Wyche et al. add to this work with their qualitative studies of Facebook use in Kenya (2013a; 2013b). Peters et al. compare Facebook use among Americans, Namibians, and expatriate Namibians (2012), while Bosch (2009) studies the use of Facebook for teaching and learning in a South African university. I extend this literature by examining Facebook practices among young marginal users in urban India, highlighting their agency as they navigate sociological and technological constraints.

Research on social networking in the developing world has been on the rise over the last few years. This development aligns with market claims that the next billion users of the Internet will come from developing countries (Boston Consulting Group, 2010) and there will be continued growth in the number of social networking subscribers from these parts (socialbaker.com, 2011). Reda et al. (2012) recently published their findings regarding different dimensions of social networking use in developing regions by using data from LinkedIn. This is a quantitative study that investigates the activities and engagement levels of users in developing regions. Matthee's study (2007) describes how Zambian users spend a considerable amount of time on social networking and communication websites, frequently engaging in cross-cultural encounters. Along the same lines, Burrell & Anderson (2009) discuss the role of the Internet in mediating relationships between Ghanaians in Ghana and those abroad.

This chapter takes Jenkins's research on participatory culture and new media literacies conducted among American teens (Jenkins, 2009) and uses it to frame new media behavior of the marginal youth in urban India. While there are certainly differences in the ways of expression that these youth choose, Jenkins's set of literacies affords a new perspective from which to view the technological practices of the youth I study. Along these lines, Ito et al. call for a broadened access to learning that is *"socially embedded, interest-driven, and oriented toward educational, economic, or political opportunity"* (2013, emphasis in original). Gee (2004) also refers to informal learning spaces as ideal learning environments or 'affinity spaces', suggesting that people learn better through popular culture than with textbooks. I extend this research done in an American context to examine the various kinds of learning that take place when less formally educated youth from resource-challenged backgrounds in India engage with Facebook.

5.3 Aspirations, Avenues, and Agency

The last few years have seen the rise of a media audience in India who will "go almost anywhere in search of the kinds of entertainment experiences they want" (Jenkins, 2006). It is this media audience I discuss, that is driven by its desire for entertainment in the form of all things mobile such as songs, films, mobile Internet browsing and mobile Facebook. Facebook is a popular media platform in India, and a *participatory culture* (Jenkins, 2009) akin to that of youth in the developed world has emerged around its use. *Timepass* (Jeffrey, 2011) represents the daily condition of underemployment of these youth. Jeffrey describes these youth as 'waiting'. With little to be gainfully employed with, they are drawn to the popular and affordable technological practices that they find emerging around them. As their friends begin to explore what the Internet has to offer, they too become curious and interested. This is the stage at which *aspirations* come into being, small or big, whether they are aspirations for a well-paying job or to learn to buy train tickets from the Indian Railways website.

These youth find innovative means to create avenues for fulfilling their aspirations. They are immersed in the culture of *jugaad*, a colloquial Hindi word that refers to innovative and improvised solutions that arise as workarounds to challenges. According to Radjou et al. (2012), jugaad is about *"doing more with less"*. It is by way of jugaad that these youth create and operate Google and Facebook accounts, navigating their way through a new and unfamiliar Internet. As described by Rangaswamy & Densmore (2013) and in my findings below, they encounter various roadblocks along the way but keep going. In this process of exploration, they rapidly cultivate "a set of cultural competencies and social skills that young people need in the new media landscape" that Jenkins labels *new media literacies* (2009). These include *play* or the ability to experiment with surroundings as problem-solving, *appropriation* or the ability to meaningfully consume and share media content, *collective intelligence* or the ability to pool knowledge with others towards a common goal, and *negotiation*

or the ability to interact with diverse communities and respect multiple perspectives, among several others. While the youth I study are older than the teens Jenkins studies, and operate in a starkly different sociocultural context, the nature of their interactions with technology affords them similar learning experiences as the teens. This will also be clear from the findings presented below.

As the agency of these youth leads them to acquire a new set of skills or literacies, they begin to create for themselves the promise of self-empowerment. By showing how these youth become agents of change in their lives, I seek to broaden the development lens by including within it development-friendly interpretations of leisure-driven new media use. My research thus aims to substantiate Arora & Rangaswamy's (2013) claims that an open-ended agenda towards new media research among these users can be instrumental towards generating new ways of witnessing new practices. A new way of seeing here *is* essential, for these marginal users have never before had affordable access to consuming *and* generating content with new media. Understanding their practices and appreciating their jugaad mechanisms can lead to a more nuanced understanding of technology adoption and use in the developing world than we have at present.

5.4   Methodology

This chapter draws upon data that was collected as part of the long-term multi-sited ethnography that forms my dissertation research, examining mobile media practices of youth from marginal communities in India. Although the ethnography was conducted in rural, semi-urban, and urban Indian sites, the data this chapter draws from was collected in the urban locale of New Delhi. At the time of my research, the youth in Delhi were active and somewhat seasoned users of Facebook, past the early adoption stage, unlike the youth I met in smaller towns. The focus of this chapter, therefore, is on these urban male youth (18-24 years old) and their adoption and use of Facebook. The reason these participants were all male is that they were selected based on a snowball sample (each participant introducing me to the next set of participants) and the few girls who willingly joined this sample were far less active on Facebook than their male counterparts. The visible gender imbalance was unsurprising due to social norms that allow males greater freedom to engage with technological devices and social networking platforms. Since the focus of my study was not on gender differences, it made more sense to exclude the girls altogether than to include them as outliers. The data in this chapter is therefore drawn from a snowball sample of 25 Facebook users. They are male and come from families earning - on average - INR 20,000 ($300) per month, translating on average to INR 5,000 ($90) per capita. All of these families have, in recent years, moved to Delhi from the states of Uttar Pradesh (UP) and Bihar in search of better livelihoods. The parents of these youth have poor educational backgrounds - the mothers are typically illiterate and the fathers have completed their tenth grade education at best. The youth themselves have attended or are attending local government schools and colleges.

Teacher absenteeism is a serious issue in these educational institutions and, as a result, the students typically have abundant time on their hands. This is the time in which they conduct the technological explorations that are the object of my study. The more enthusiastic ones try to obtain temporary employment in odd jobs that will give them a disposable income and support their personal expenses.

The families of these youth all live in and around the Sewa Nagar area in New Delhi, where a large population of migrant workers resides. Having grown up in Delhi and being familiar with the socioeconomic conditions of various neighborhoods, I used existing ties with local residents to obtain access to these youth. The second set of participants in my study included mobile retailers from 10 shops in the Sewa Nagar, Meharchand, and Khanna markets who were aware of the mobile practices of the above-mentioned youth. These retailers were all male for similar reasons as listed above. They were adept users of varied mobile devices, well-versed in mobile trends, and catered to a diverse clientele.

I used in-depth interviews and participant observation for data collection. I interviewed the youth in their homes or their friends' homes. Each of these youth owned at least one mobile phone as their primary technological device and medium for connecting to the Internet. Several interview questions were directed to their use of the mobile phone for accessing the Internet and Facebook. As for the shop-owners and assistants, I spoke to them extensively in their shops and observed their interactions with customers. The interview protocols I followed were different with these two groups of participants but similarly targeted towards understanding the mobile and Facebook practices of the youth.

The interviews were conducted in Hindi, my native language as well as that of the participants. There was no interpreter and all interviews took place one-on-one. Participants were explicitly and openly informed of my research objectives and their names have been anonymized for their protection. Standard procedures were followed for obtaining informed consent and the interviews were digitally recorded and transcribed. The data was then coded and organized thematically to identify emerging patterns of Facebook use (Glaser & Strauss, 2012). The analysis of the collected data was informed by the approaches of Miller & Slater (2000) and Horst & Miller (2006), who stress that the meaning of technology is not predetermined by its form but derives from the different ways in which different user groups interpret it. The benefit of using an ethnographic approach for this study was that it allows me to learn not only about Facebook practices, but also about other sociotechnical configurations that have emerged alongside and impacted Facebook adoption and use.

5.5   Findings

The findings of my study are organized in the following three categories. I begin with presenting the varied motivations that led my study participants to become Facebook users

in the first place. I then describe the direct affordances that Facebook offers these users that sustain their engagement, also noting the challenges that they overcome in the process. Finally, based on my interview data, I suggest potential avenues where this engagement appears to be taking them - the *indirect* affordances of Facebook. As Latour suggests (1987), my focus here is not on the technology but what it enables and how the youth pursue their conscious acts of "configuration, mediation, and active interpretation," that add value to this technology (Pinch and Bijker, 1984).

Facebook adoption has grown considerably with the adoption of the mobile Internet. Mobile phones have flooded the market, becoming increasingly inexpensive and more affordable for the masses. An interview with a retailer at Modern Communications - a small but well-equipped mobile shop in Khanna Market in New Delhi, with a socioeconomically diverse clientele, revealed that youth these days are most keen on purchasing mobile phones "which have Internet". Dinesh, an employee at Modern, told us that his customers are now only interested in phones that are 2G- or 3G-enabled. As a result, his employer requires that the salespersons all be adept at accessing and using the Internet, Google, Facebook, etc. because "that is what the public wants". The 'public' may have wanted 'that' but did not always have access to it. Price wars between mobile phone companies and mobile data providers, however, have resulted in what one participant termed 'the mobile typhoon'. Not only have Internet-enabled phones become more affordable (now $30-$40 will buy a good Nokia 2G-enabled phone), but in the last 2 years the cost of getting Internet on the mobile has also reduced to less than $2 a month.

To understand the demand for Internet on the phone, it is critical to note that these youth have never owned a personal device on which they could access the Internet. Some of the homes I visited did have a shared laptop, but various issues appeared to restrict its usability for the youth I spoke to. First, they found the machine at home unattractive for use because it was typically old and dilapidated, often ridden with viruses. Second, they disliked having to share the machine with other family members. Rahul complained that he would have to wait for his older brother to leave the house in order to use their shared machine - "I never get a chance to use it otherwise". Third, shared machine access also meant mediated Internet use by the parents. Mohit shared, "We want the computer for games and multimedia, not for work or studying - like my parents want. I want to use it for entertainment, chatting, sharing, games... but my parents won't let me." Finally, there is the cost and hassle of setting up a wired Internet connection at home. According to Sanjay:

> "A wired connection is a pain to install. You have to call them multiple times
> to set up the landline first ... then it takes another few weeks to set up the net.
> The customer service is terrible - if anything goes wrong, no one knows how to
> fix it. What is the point?!"

As for the cost, Pradeep shared:

> "Things are tough at home so I don't have a computer. I've had Internet on my Nokia mobile for the last 1.5 years. I get 1000 MB for a INR 98 ($1.5) Airtel recharge. You can load anything on it. Seeing stuff doesn't take a lot of MB."

Mobile Internet addresses each of the above problems satisfactorily for my participants. They can use Internet on their relatively up-to-date mobiles and in their own time, obtaining unmediated access to 'entertainment, chatting, sharing, games' and at a far lower cost. As Dinesh at Modern said, "Laptops are passé. Everyone has Internet on their phones now. That is all they want." Cybercafés also afford updated machines and personal and unmediated access. There is, however, the loss of mobility and the hourly access rate (approx. INR 20 or $0.30) quickly adds up.

While the utility of the 2G- or 3G-powered mobile phone for these youth is indisputable, another major driver of adoption is the *'I want what he has!'* phenomenon. With more advanced models regularly flooding the mobile market, the youth are driven to acquire newer, better phones all the time. Their first mobile phone is typically a gift from their father or older siblings (sometimes used). Pradeep shared that he had "emotionally blackmailed" his parents into getting him a mobile phone: "I did not eat for two days and nights until they finally agreed." A phone doesn't last very long in the hands of these youth, however, and is traded-in every few months, sometimes every month, for a better phone. At the heart of this drive for more and better mobile technology, it turns out, lies a strong desire to be connected on Facebook. Mohan spends a minimum of two dedicated hours on his mobile every evening accessing Facebook. He says:

> "Because of Facebook, we are going towards more and more technology. My first mobile had a 2MP camera. So when I got some more money, I wanted a better mobile with a better camera, so I could take better pictures on it and share these with my friends. If I go to a new place and don't take photos, my friends will say, 'If you didn't take photos what did you do?' So I take photos and upload them right away . . . Facebook has increased expenses for everyone (chuckles)."

Dinesh, at Modern Communications, also claimed that Facebook was "creating a thirst" for better and more advanced mobile technology:

> "The phone has become like a status symbol. If one has a good phone, the other will also want the same phone. They carry it in their hand all the time . . . it has become a part of their body, a part of their personality. If a guy doesn't have a good phone, everyone will look at him and say that he looks so old-fashioned, so backward, or that he is such a miser. Who would want to be that guy?!"

Just as they are interwoven in the findings above, Facebook, personal and unmediated Internet access, and advanced mobile technology are innately linked in the minds of these youth. Together these create an identity that they consider critical for social acceptability. I

now discuss the direct affordances of Facebook that keep them engaged. 'Chatting' was the first affordance that had hooked every participant to Facebook. I discovered that a major motivating factor was the government regulation that no mobile user could send more than 200 SMSes per day (Government of India, 2012). This led several of my participants to discover that Facebook afforded them limitless chatting, and better still, it was real-time communication. As Amit who works at a mobile shop in Sewa Nagar shared: "Earlier there was no limit on SMS, but now there is a limit. On Facebook, you can chat as much as you want. If that is the case, why will anyone want to use SMS? Facebook chat is live, that is even better!" Mohan, too, chats with his friends through the day. In the two hours that he spends daily on Facebook, he said:

> "I chat with my friends. . . I have friends worldwide. . . because of gaming. I play lots of games - Mafia Wars, Café World, 'Farmvilla'. . . these are just the ones I play every day. There are many, many more. You can get lost in them. On Facebook you meet a lot of new people, learn a lot of new things from them. . . you get entertainment also. There were so many things I did not know about the world that I know now. . . the world is so diverse, so big. . ."

Facebook represents, for these youth, the potential to connect to one another and to a global network that they did not have access to before. When Sanjay first joined Facebook, he and his (local) friends decided to compete over the number of people they could get to accept their friend requests:

> ". . . I made 150 friends, but then I got stuck. Someone told me 'Don't send [friend requests] to Indians. There is a country. It is called Brazil. The people there are very friendly. Send them [friend requests].' So I sent them friend requests and they accepted. This is how I increased my friend count to 300."

Sanjay would have had limited access to these relationships in person, because of his caste, education status, and economic background. None of this mattered, however, while he was on Facebook, connecting with people across the globe. "Are you able to communicate with these friends?" I asked. Sanjay responded:

> "At first it was hard. . . They did not speak English. I did not understand what they were saying to me. Then I asked someone. They told me that in Brazil they speak a language that starts with a P. . . but I can go to Google Translate and understand what they are saying. A girl called Monica accepted my friend request. She wrote me a message saying 'How are you? Reply me must. I am waiting.' I went to Google Translate and wrote her a reply in English. Then I converted it back to that language and sent her the message."

Not only did Sanjay figure out how to communicate with users across the world, he even made a schedule of who would be awake at what time, after looking at time differences between various countries and India: "When it was morning in Indonesia, I would say 'good

morning' to my Indonesian friends. . . like that. . . ."

Sanjay's English, like the others', is broken at best. So how do these users communicate, even if they are able to use Google Translate to translate from English to foreign languages? Raju, who recently migrated to Delhi from his village in UP, shared how he overcame this barrier:

> "The main barrier for people is their education, because of which they are unable to figure out [the Internet]. They change the language on their phone to Hindi, but the language of the Internet is English. If they do this, how can they move forward? If we try, what can't we achieve? If we try, we can achieve anything. If they don't know English, they can make an effort. If they try, then can read each letter of the alphabet. My teacher in school told me to look at an English newspaper. First I looked at the figures, then I started reading the headlines. Slowly, slowly I started to understand. Now I can read everything on the Internet."

This is the spirit of *jugaad*, mentioned above, that brings these youth to accomplish feats that might typically be considered beyond their reach. Their desire to navigate the Internet and to communicate across linguistic barriers and geographic boundaries drives them to invent avenues of learning where none had existed. Sanjay also shared the ways in which he had learned:

> "The environment teaches us. At first no one I knew used the net. Slowly my friends started saying to each other 'Meet me online, meet me online.' I wondered what it meant to meet online, or to chat. I stored all these words in my head, then one day, I summoned the courage to ask a friend what they meant. He told me, 'Come to the cybercafé, I'll show you.' I had to buy him two hours of net access before he showed me how to create my Gmail and Yahoo IDs. The guy who runs the cybercafé - he also helped me when I had problems . . . . Slowly I learned everything. First I learned to download themes. I would download 60-70 themes in one shot. Then I learned to download songs - there are several sites where you can download any song you want. Now I have figured out everything - songs, movies, YouTube, Facebook. Earlier I did not like taking photos. Now I take lots of photos and share them all with my friends."

The environment taught Sanjay, who in turn has shared his lessons with several others. He takes pride in teaching his friends how to use the Internet and connect on Facebook:

> "Now my personality has become such that I will get jealous if my friends go to anyone else. They must come to me. I love explaining everything to them. There is a friend who comes every Saturday and I teach him. Then there is a *halvai* (sweet maker) who is illiterate. I teach his children how to use the Internet. It makes me feel smart. . . useful."

Sanjay's desire to share his net expertise with his friends and family was shared by several other participants. There are helpful *mediators* (Latour, 2005) - friends, relatives, mobile retailers - who teach them how to go online, Google for music and movies, and create Facebook accounts on newly acquired Internet-enabled mobiles. Dinesh mentioned that, earlier in the day, a taxi driver had come in and asked for a phone on which he could use Facebook:

> "Customers ask us how to go on Facebook. This is the reason we have a job. Knowledge doesn't come all at once. . . it comes slowly, slowly. If you haven't used something, how will you know how it works? Knowledge takes time to spread."

These mediators, however, are not the only means of learning. For those who desire more guided instruction, there are locally administered three-month computer courses that have become very popular. They are designed to teach students the basics of how to operate a Windows machine. They learn how to type, how to create, store, and transfer files, how to use tools such as Microsoft Office, and finally, how to navigate the Internet and create email IDs and Facebook accounts. According to Surendra, who completed one of these courses, "If you do it [Facebook] regularly, you will become fast at it. It's not such a big deal, really. In 30 days you become comfortable. By chatting every day, my speed has improved a lot." Be it through these courses, or with varying levels of guidance from friends and family, these youth proactively overcome hurdles in the interest of sustained Facebook engagement. This does not imply that their understanding of how Facebook operates is complete or flawless. For instance, one of my participants was under the impression that he had to 'apply' to Facebook for an account and that a human on the other end would assess his application and then decide whether to accept it or not. He claimed that his first few applications had been rejected, but he would keep trying.

Once these youth learn to navigate their Facebook accounts, and the initial learning hurdles are overcome, they begin to create new avenues for themselves. Through maintenance of a regular communication channel with friends, one person's knowledge and skill finds its way to another. Awareness about technological advancements, the world, current affairs, and even popular culture increases. The song *'Kolaveri di'* had become a raging hit with my participants prior to this study primarily due to being circulated widely on Facebook (Menezes, 2011). Entertainment, however, as I was told 'is a passing phase'. Users get their fill and move on to concerns of livelihood. From the initial desire to accumulate as many friends as possible, they become more strategic about who they 'friend'. Instead of focusing on virtual ties, the focus shifts to maintaining real ties, particularly the weak ones (Granovetter, 1973) that could prove fruitful in the future. Raju shared that Facebook allowed him and his friends to celebrate each other's birthdays that were earlier unknown to them. This would bring them to meet more frequently than before. He, among others, also stated that a big advantage of Facebook was that it allowed people to get back in touch after years of separation:

> "There was a classmate of mine from 12ᵗʰ grade who I had lost touch with after
> he moved. I looked for him and found him on Facebook. Now we are in touch.
> This is great! Similarly, when I lose touch with my friends today, I can look for
> them 10 years later and connect with them! Who knows, maybe years down the
> line my friend will be in a big company... maybe then he can be of use to me."

The hope that Facebook may someday make itself useful in terms of gainful employment is also apparent in the profiles that I saw of my participants. I was told that it was normal to present oneself as better and more accomplished than one actually was. For example, a 'B.A. Fail' would show up as a 'B.A. Pass' and a 'B.A. Pass' would show up as a 'B.A. Honors.' It was common to misrepresent schools and colleges as better schools and better colleges. Photos were never original either, and often belonged to famous Bollywood celebrities. Facebook thus allowed these youth to represent themselves using their aspirational rather than real identities. Most of my participants recognized and acknowledged this trend, and subscribed to it regardless.

5.6 Discussion

With the findings presented above, I uncover how the social circumstances of the youth that I study inspire diverse interpretations of technology. I also describe the challenges that impact their navigation of this technology and the innovative need-driven means that they develop to overcome these challenges. *Aspirations* get created first, frequently driven by peer pressure and the thirst for leisure. Next, *avenues* are cleared to achieve these aspirations. Finally, the *agency* of these youth leads them to pursue these avenues relentlessly until their aspirations are indeed achieved. This also clears the space for a new set of aspirations. The primary contribution of this chapter is to highlight this aspiration-avenues-agency cycle as it comes into play among Indian youth from resource-challenged backgrounds in the context of Facebook use. Jeffrey describes *timepass* as a state of waiting (2010). My study examines how the state of waiting fully embraces the mobile revolution and allows the Facebook culture to take over. The youth use *jugaad* to adopt technological tools and services, and the affordances of these tools and service expose them to new opportunities, causing them to develop newer aspirations and workarounds. This process, directly or indirectly, iteratively leads these youth to acquire and hone new media literacies (Jenkins, 2009). Accessing the Internet to use Facebook may hone their *play* skill at a basic level, but it also allows the users to *perform* according to an identity of their choice, to *simulate* real world interactions online, to *appropriate* and share media, and to *multitask* and conduct various online activities at the same time. It builds *distributed cognition* as they learn to play a variety of games and engage with them at the same time, *collective intelligence* as they solve problems together and help each other, *judgment* as they understand which sources to trust and which not to trust. By learning that different devices act differently, they cultivate the skill of *transmedia navigation*. By tapping the right resources so that they can get online and learn the necessary fluency with Facebook, they build the skills of *networking* and *negotiation*. Without

answering the question that the title poses, this chapter aims to offer a compelling case for further examining whether these new media literacies do, in fact, lead to self-empowerment.

While proposing that Facebook practices may drive self-empowerment, this chapter simultaneously aims to balance the technologically deterministic view that Facebook itself drives the change. The combination of social and technical developments that comprise the mobile revolution described above makes it impossible to isolate the impact of Facebook had it not happened at the 'right place and the right time'. Several participants claimed that there was nothing special about Facebook's technology, but that it lay on the 'What's next? What's next?' trajectory of technological advancements, right behind mobile phones and the mobile Internet. Viewing Facebook in light of this transience aids us in looking beyond its particularities at the less transient agency of the youth I study.

This agency is frequently denied to marginal technology users in the traditional discourse of development. By adopting a narrow development lens to look at technology, we blind ourselves to the innovations that these users repeatedly come up with. It is limiting to view mobile phones as enabling development only when they enable the transfer of funds or market information but not Bollywood songs. Studying leisure-driven technological engagement can allow for a deeper understanding of technology adoption in the developing world (Arora & Rangaswamy, 2013), just as with this paper, Jenkins's lens of new media literacies (2009) enables us to note the concrete set of skills acquired from this engagement.

In a heavily class- and caste-based society like India's, youth are attempting to break out of these imposed social boundaries and expand their circle of relationships through Facebook. By embracing the *affinity space* of Facebook (Gee, 2004), these youth from the lower socioeconomic stratas in India are able to consume, produce and share content with other Facebook users around the world. This kind of interaction brings us towards a truer democratization of new media.

5.7   Conclusion

The Internet-enabled mobile phone represents, for previously isolated users such as the youth in this study, the opportunity to be included in the process of globalization by connecting to others in a worldwide network. Facebook offers them the avenue to orchestrate cross-cultural encounters and generate foreign ties, changing their sense of the wider world and their place in it, as it is reformulated through Facebook. They learn to navigate their social terrain in a number of roles as an individual, a member of a socially networked group of friends, and with a transnational identity. Thus, Facebook derives a variety of meanings for these users as entertainment provider, an avenue for networking and growing friends, a means of self-development, and more.

Although the case study I present in this chapter pertains to Facebook use, there is a need for research to go beyond Facebook and social networking to studying new media adoption in general. With increasingly affordable technological devices, there is far greater access to media consumption and production in India and other parts of the global south. The combination of this growing participatory culture and tendency for jugaad is creating new avenues for self-expression and self-empowerment for the less privileged. Although the literature on Facebook use in the global south is limited, I have shown (in relation to prior work) that different developing countries may exhibit different Facebook behavior. Patterns of use and dissemination of technology in India are different from those in the West and from other developing countries, albeit in varied respects. Even within India, as mentioned above, there are discernible differences in the ways that Facebook is used in urban, small-town, and rural parts. Within the urban context, the Facebook behavior I observed is heavily conditioned by the demographic backgrounds of the study's participants. There is considerable potential, therefore, to extend this work and gain a deeper understanding of users and user agency in other impoverished circumstances across the world, to learn to appreciate how innovative workarounds can create opportunities where none existed, and to explore that "converged environment in which the lines between leisure and learning, public and private, work and play are increasingly, and productively blurred" (Livingstone, 2008).

Chapter 6

Conclusion

This dissertation begins with Kabir and his spiritual teachings dating back to the 15th century and ends with Facebook and the avenues it represents for youth of the 21st century. The thread I use to connect these two is new media and its local appropriation for the production (and re-production) of popular culture. In the last four chapters, I organized, presented, and discussed my ethnographic findings from field sites in rural, small town, and urban India. I used these findings to highlight the agency of individuals from socioeconomically challenged backgrounds that arises from their strong desire to adopt new media technologies for non-instrumental ends. In this chapter, I summarize and organize my conclusions into the four quadrants that I had presented in the first chapter: culture, technology, agency, and development.

6.1   Culture

It was February 5, 2009. The UC Berkeley Center for South Asia Studies was hosting the Kabir Festival, which entailed the screenings of four films and a culminating concert featuring the well-known Prahalad Singh Tipaniya and his troupe from Malwa (Madhya Pradesh). Not otherwise a documentary or folk music enthusiast, I was captivated in just the first few minutes of *Had-Anhad* (Virmani, 2008). The film documents how Kabir's poetry, carried through generations by Indian folk musicians, has been kept alive amidst Hindu-Muslim tensions in politically volatile regions such as the India-Pakistan border and Ayodhya (Uttar Pradesh). Three diligently attended screenings later[1], I remained a captive audience.

Kabir lived in the 15th century but his spiritual message has been reiterated through generations, enriching rural Indian lives, by these musicians who continue to sing his poetry in live, well-attended concerts. The Kabir music practice - analyzed by Linda Hess (2014) and filmed by Shabnam Virmani (2008) - forms one strand of a widespread folk culture

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[1]Virmani created four short films under the aegis of The Kabir Project (www.kabirproject.org). Each uses a distinct lens to view Kabir's presence in today's society.

Figure 6.1: The Kabir Festival flyer from Spring 2009 (Center for South Asia Studies, email communication, February 5, 2009).

examined in depth by Peter Manuel (1993). My engagement with this culture arose from attending various Kabir *utsavs* (festivals) and *yatras* (journeys) in the course of my dissertation research. As digital technology penetrated this realm, something was beginning to shift. Through repeated observations, numerous interviews, and nights spent in rodent-infested rooms, I gradually came closer to identifying that shift. The influx of new media technologies was altering the way that Kabir had been received, produced, and reproduced in these communities that had largely been oral thus far, as documented in Chapter 2. Folk culture was mingling with the emerging mobile culture as the masses began to use their mobile (and other new media) devices to engage with age-old forms of music.

Raymond Williams (1983) has offered three broad definitions of culture. First, as a "general process of intellectual, spiritual, and aesthetic development", second, as a "particular way of life, whether of a people, a period or a group", and third, as "the works and practices of intellectual and especially artistic activity". The Kabir folk culture I observed fulfills each of these definitions, seen from the perspectives of both the performers and the audience. Not only is it an artistic pursuit for the musicians, it also contributes significantly to the

spiritual development of the community. The *satsangs*, big and small, create an experience that teaches and entertains at the same time. I observed this to be true in both the urban and the rural spaces I explored. The music drew large audiences in concerts held across India. While this was expected in the rural areas where Kabir had been sung for centuries, the urban following came as a surprise. I interviewed listeners in the cities and villages alike, and saw that a common chord had been struck across the rural-urban divide. Kabir connected with each individual uniquely, just as he had connected with me across the seas in Berkeley.

My dissertation looks not *at* this (and other) folk music alone, but also *beyond* it. What was it that had brought Kabir to escape his rural environs and find his way across cities, across the world? At first glance, it was the films the Kabir Project had produced that had created a wave of Kabir awareness across India *and* overseas. There was something deeper at play, however, that I examine in this dissertation, and that is the proliferation of this music on account of the new media technologies that have recently gained immense popularity. In this space where culture and new media intersect, there are two primary research questions I was compelled to answer. First, how do *we* configure our technologies towards producing culture? Second, how do our technologies configure *us* in our pursuit of culture? I address these questions in the section below.

6.2 Technology

In Chapter 1, I mention the different ways we can viewing technology in relation to humans (Orlikowski, 2009). The technological determinism argument asserts that "there is a fixed sequence to technological development and therefore a necessitous path over which technologically developing societies must travel" (Heilbroner, 1967:336). The social determinism argument, on the other hand, claims that technologies are developed with a particular objective, to satisfy a specific social need, and to benefit those who are able to finance this development. The former stance assigns all power to the machines while the latter assigns it all to the humans. The latter view is fast becoming less predominant since we live in an age of plentiful technological development, but its consideration allows us to hold the two opposing views side by side such that a 'middle way' emerges. This middle way allows us to assign relevance to both the social and the technical. Power no longer resides with one or the other but constantly switches hands. With regards to my research, it is this middle way that I adopt.

Certainly the social came first. In the context of Kabir, Hess (2014) writes about the interwoven orality and textuality of his music tradition. If we see the oral as social and the pen or scribe as the technology, then according to Hess, these have acted upon, influenced, and recreated each other through the centuries. Even for the illiterate singers of today, she says:

Figure 6.2: CDs gradually lose their stronghold in the market and find other 'applications'. I took this photo in March 2012 in New Delhi.

> "Though they didn't read and write down Kabir texts for their own use, they listened to cassettes, watched VCDs, and heard performances by singers who did write and read. So the material they were getting was heavily influenced by the whole history of media we are reviewing here." (Hess, 2014)

Further, just as their music practice came about as a result of the media that preceded it, their performances too came to be recorded in cassettes and VCDs that fed back into the growing folk culture. The oral may have come first, but the textual quickly became inextricable from it, and when the digital came along, the oral, textual, and digital became impossible to isolate from their blend. My ethnographic study began as this practice allowed mobile media into its realm. I found that just as the increasingly ubiquitous mobile phone allowed for Kabir's poetry to expand its reach, the affordances of the mobile and their impact on consumption also motivated its wider adoption.

Once again, my objective is not merely to look at mobile technology, but to look beyond it as well. In this dissertation, I have used two material-semiotic lenses for analysis. These lenses - of materiality in Chapter 3 and Actor-Network Theory (ANT) in Chapter 4 - focus on particular aspects of the technology and how these aspects contribute to the role played by this technology in a sociotechnical configuration. The materiality lens allows me to draw attention to the "intertwining of social phenomena with the material world" (Dourish &
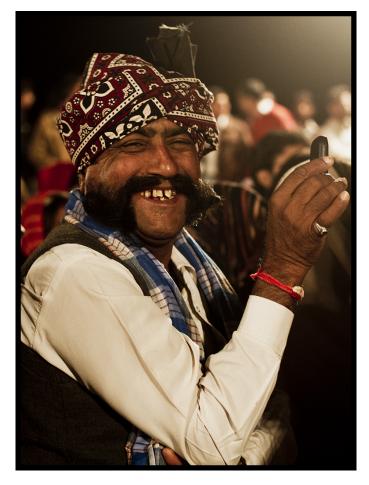
Figure 6.3: Mura Lala, a Kabir singer from Gujarat, records another folk singer's live performance on his mobile phone. I took this photo in Bikaner in March 2012.

Mazmanian, 2011), highlighting both the inherently physical nature of information in digital form and the consequences that has on social and cultural practice. While the ANT lens is similarly focused on the material, it allows me to zoom out, so to speak, and examine the heterogeneous assemblage of mobile phones and media pirates. Despite their differences, both approaches serve to establish that what mobile media affords is just as important as what humans choose to use it for. In other words, the *agency* of both humans and technologies is worthy of consideration.

6.3   Agency

A single moment is responsible for the journey this dissertation has taken - that moment when I sat on stage in the Guru Purnima Utsav in Luniyakhedi, accompanying Shabnam in singing a Kabir *bhajan*. In that moment, I witnessed numerous mobile phones being held by

outstretched hands as they recorded the live performance. It was that stimulating sight that eventually led to this dissertation. The next morning when I asked Ajay, Prahaladji's son, what those mobiles were being used for, he told me, "You should talk to Dharmen. He has his own business. He creates and sells these video recordings." I asked him who Dharmen was. He said, "Dharmen? You don't know Dharmen? He's my brother. There he is...." Indeed, there he was, his 18 year-old self dressed in trendy blue jeans, buttoned-down half shirt, and aviator sunglasses, whizzing past us on his motorbike. A bit taken aback by this unexpectedly 'non-rural' appearance, I wasn't sure what to expect. Really, I was prepared for anything.

Dharmen and I had a chance to speak later in the day, when he patiently explained to me - as a parent would to an inquisitive child - that a new media ecology was emerging and he was cashing in on it with his relatively superior computer skills and technical knowledge. His friends and neighbors now had mobile phones with memory cards that could store audio and video files. They came to Dharmen so that he could download this content onto their phones. Dharmen already enjoyed a special status in his circles since he was Prahaladji's nephew, but he was also recognized as the local expert, the go-to person for all kinds of technical needs. He was just returning from a trip to the nearby market in Maksi that he had made to fix someone's video camcorder. This was his errand for the day, but on other days there were other such errands.

In the course of my research, I encountered many Dharmens. This dissertation is in large part about them. Despite the socioeconomic constraints that their upbringing takes place in, or perhaps *because* of this constrained upbringing, they become game-changers. There is a colloquial term that captures this ability and has recently gained currency in academic and business literature as well (Rangaswamy & Densmore, 2013; Radjou et al., 2012; Prahalad & Mashelkar, 2010). The term is *jugaad* and is commonly used to refer to both the process of arriving at a 'quick and dirty' solution and the solution itself. It is used freely in a variety of contexts and with a range of meanings. Jugaad is the suavity with which a free rider might convince the ticket collector to let him ride free. It is also the innovative expertise of a farmer who devises a means of using water more efficiently for irrigation. In medical terms, it may mean a low-cost incubator that improves infant mortality rates in remote rural areas. It could also be used for business practices that involve lying to customers and passing off old mobile devices as new ones. Generally speaking, jugaad enables one to 'gain more with less'.

It is worth mentioning here that adopting the ANT framework was particularly productive towards highlighting the agency of Dharmen and others like him. As Latour (2005) says, it is important to follow the actors:

> "...you have 'to follow the actors themselves', that is try to catch up with their often wild innovations in order to learn from them what the collective existence

> has become in their hands, which methods they have elaborated to make it fit
> together . . . ." (Latour, 2005:12)

Following the human actors and the "methods they have elaborated" revealed to me the extensive presence of jugaad, but ANT does not stop there. It also draws attention to the non-human actors and the agency these exhibit. This provision of agency by ANT to inanimate 'things' has been heavily challenged. My intention is not to invite controversy or offend the sensibilities of those who adhere to that view. I do argue, however, that granting agency to technology has the potential to offer a unique understanding of the role it plays in the social realm. My research shows, in general, that the acquisition and ownership of shiny new mobile phones and various popular mobile media serve as drivers of technology adoption and digital literacy. Chapter 5 draws focus to the agency of Facebook, in particular, as it inspires in its users the agency to build on their new media literacies (Jenkins, 2009) and carve out a new and improved identity for themselves. This brings us to the subject of self-empowerment and development, that I discuss in the following section.

6.4 Development

This dissertation has examined the trajectory of new media adoption and use by marginal users in rural, small-town, and urban India. Using the development lens to view this research is useful not because the findings situate themselves well in this framework, but because they do not. Traditional notions of development are too narrow and tend to overlook uses and applications of technologies that are not utilitarian or lacking a clear socioeconomic focus. Arora & Rangaswamy (2013) and Smyth et al. (2010) also highlight this limitation, suggesting that mobile phones are only considered development artifacts when they are used for instrumental purposes, not when they are used for fulfilling entertainment needs. The disadvantage of holding this narrow view is that it prevents us from taking note of less obvious trajectories of development such as the one I document in this dissertation, wherein individuals are driven by their desire for leisure to move towards self-empowerment.

With increasing affordability and penetration of new media technologies in socioeconomically disadvantaged parts of the developing world, there is a growing need to expand the boundaries of 'development' and include in its purview the emerging innovative entertainment-driven technological practices of marginal users who have recently made their foray into the digital world. In Chapter 5, my findings highlight the motivations and agency of marginal youth as they overcome various hurdles to actively appropriate and use new media and create an informal learning space for themselves through these interactions.

There is a practical aspect to challenging the traditional notion of development as well. This is for the benefit of the researchers and development agencies who are committed to investigating ways in which technology can result in developmental growth and have an

economic impact on livelihoods. For technology to be beneficial in a particular context, it is critical to understand what its access means to individuals and what factors drive its adoption. Ratan and Bailur (2007) conclude that 'ICT access' is "both an intrinsic good in promoting agency capabilities and an instrumental good in promoting welfare capabilities" and argue that using "paternalistic strategies to override the choices of local Users is indeed anti-development". Like them, my goal has been to emphasize, through this dissertation, the importance of the values of the poor and what *they* consider important to them. Further, I have argued that the path that leads them to pursue what matters to them also takes them towards self-development. This also aligns with Sen's Capability Approach (CA) that challenges traditional utilitarian and opulence-centered perspectives and defines development as "a process of expanding the real freedoms that people enjoy to lead the lives they have reason to value" (Kleine, 2013).

6.5 Directions for Future Research

As new media technologies gradually penetrate historically resource-poor communities both in remote rural parts or in urban slums, new cultural practices emerge to transform local media ecologies. The field of New Media Studies would be enriched with further examination of these ecologies where the patterns of use are so different from the West. This would also prevent the hasty conclusion that all developing regions exhibit similar patterns of use. For example, it is clear from the research I cite (others') and my own research in Chapter 5 that they can vary greatly from developing country to developing country, and even within countries. As the poor are able to do more with technology, new areas for exploration will continue to emerge, and studying these emerging practices will lend greater insight to technology adoption and diffusion in communities where current research has only scratched the surface of these processes. In Chapter 5, I mentioned the new media literacies (Jenkins, 2009) that are being acquired as a result of new media use. There is potential to study this phenomenon more deeply, with the growing adoption of digital technologies. In particular, it would be valuable to explore the informal learning that takes place in these new digital environments, especially in regions where literacy rates are lagging.

The adoption of material-semiotic approaches can be translated to several different contexts in the ICTD and HCI4D domains, since technology lies at the core of these contexts. These approaches can help to frame research findings that highlight the role of technology, the specificities of the material, and how these can be leveraged in ways that the users might benefit most from. As I have done, using the lens of agency could offer researchers, designers, and practitioners new insights into existing and emerging sociotechnical configurations in the realm of ICTD.

In Chapter 5, I highlighted the agency of individuals as they overcome hurdles to become adept with Facebook. For HCI researchers, particularly HCI4D researchers, who focus on

user-centered design, this study offers a compelling conundrum. How far need the design of a technology be 'fitted' to suit the target user? If the technology can really offer what the user is looking for, then how critical is the user interface? My dissertation does not offer a comprehensive answer, but it does firmly raise the question. If we draw our attention to the distance between the human (at point A) and the computing technology (at point B), with the assumption that this reduces to 0 when the technology is successfully adopted by the human, then it is worth considering whether this distance is covered by the effort of the human or the effort invested in the design of the technology. The field of HCI could greatly benefit from an examination of the factors that - ascribing agency to both humans and technology - impact the mapping of this distance from point A to point B.

6.6 Contributions

This dissertation presents an ethnography of new media practices of individuals from socioeconomically challenged backgrounds in rural, small-town, and urban India. By examining the genesis of these practices in the lives of the poor, it offers an understanding of the factors that drive local adoption and use of new media technologies, focusing particularly on the mobile phone. It also investigates the impact of the proliferation of digital media in communities that have historically been technology-poor. I summarize here the key contributions made by my dissertation research.

My research extends the field of New Media Studies by contributing to the literature on new media adoption and use in parts of the developing world, an area of research which has only marginally been explored by existing scholarship. In this dissertation, I show that there are innovative new practices emerging as a result of the increasing affordability of the mobile phone and mobile media in historically under-represented regions, and argue that there is potential to uncover a deeper, more global, and therefore more complete understanding of new media by studying media practices in these socioeconomically constrained parts of the world.

By adopting a material-semiotic approach to frame my findings, I contribute to the field of STS with my study of a media ecology where the social and the technical are intricately interwoven and continually shaping each other. By using the analytic lenses of materiality and ANT, I show that new media technology does not exist and evolve on its own, but takes the form given to it by its users, who in turn respond to particular affordances of the material.

For the HCI community overall, and especially for those conducting HCI4D research, there are three contributions this dissertation makes. First, it describes technology adoption and use in (one part of) the developing world, and by doing so it also reveals what these technology practices are *not*. Not only do I make apparent that these are different from the practices that have evolved in other more developed regions, I also hope to provide a point of comparison for researchers in other developing countries to see that even between similarly

resource-challenged regions, there are great variations to be seen. My second contribution to the field of HCI is to demonstrate the value of using theoretical frameworks for analysis of user practices for they can highlight key features of sociotechnical interactions. Finally, this dissertation also shows that technology adoption is not only about user-centered design, or designing a technology specific to the perceived needs of the targeted community. In the presence of sufficient motivation, my findings demonstrate that the user is willing to overcome various hurdles to adoption.

Finally, for the field of development studies, I present a case to broaden the traditional, limited notions of development, by showing that - in line with Sen's Capability Approach (1999) - when the poor have the freedom to explore their choices, and adopt technologies to further their own interests, they may just carve out a path towards self-empowerment and an improved life for themselves. By examining the agency of the Indian youth I study, I show that it is worthwhile to consider the non-instrumental uses of technology, even (and particularly) within the context of development.

Bibliography

Ahearn, L. M. (2001). Language and Agency. *Annual Review of Anthropology*, 109-137.

Arora, P., & Rangaswamy, N. (2013). Digital leisure for development: Reframing new media practice in the global south. *Media, Culture & Society, 35*(7), 898-905.

Bailur, S. (2007, May). The complexities of community participation in ICT for development projects: The case of "Our Voices". In *Proceedings of 9th International Conference on Social Implications of Computers in Developing Countries.*

Bellman, E. (2009, November 22). Cellphone Entertainment Takes Off in Rural India. *The Wall Street Journal.* Retrieved December 18, 2013 from online.wsj.com.

Benjamin, W. (2008). *The Work of Art in the Age of Mechanical Reproduction.* Penguin UK.

Benkler, Y. (2006). *The Wealth of Networks: How Social Production Transforms Markets and Freedom.* Yale University Press.

Blanchette, J. F. (2011). A Material History of Bits. *Journal of the American Society for Information Science and Technology, 62*(6), 1024-1057.

Bosch, T.E. (2009). Using online social networking for teaching and learning: Facebook use at the University of Cape Town. *Communicatio 35*(2), 185-200.

Boston Consulting Group. (2010). The Internet's New Billion. Retrieved December 18, 2013, from http://www.bcg.com/documents/file58645.pdf.

Böbel, I. (2012). Jugaad: A New Innovation Mindset. *Journal of Business and Financial Affairs 1*(4).

Brewer, E., Demmer, M., Du, B., Ho, M., Kam, M., Nedevschi, S., . . . & Fall, K. (2005). The Case for Technology in Developing Regions. *Computer, 38*(6), 25-38.

Brunette, W., Sundt, M., Dell, N., Chaudhri, R., Breit, N., & Borriello, G. (2013, February). Open Data Kit 2.0: Expanding and Refining Information Services for Developing Regions. In *Proceedings of the 14th Workshop on Mobile Computing Systems and Applications.*

Bull, M. (2000). *Sounding Out the City: Personal Stereos and the Management of Everyday Life.* Oxford: Berg.

Bull, M. (2005). No Dead Air! The iPod and the Culture of Mobile Listening. *Leisure Studies, 24*(4), 343-355.

Burrell, J. (2009). The Field Site as a Network: A Strategy for Locating Ethnographic Research. *Field Methods, 21*(2), 181-199.

Burrell, J. (2012). *Invisible Users: Youth in the Internet Cafes of Urban Ghana.* MIT Press.

Burrell, J. (2013). The Materiality of Rumor. In *Materiality and Organizing: Social Interaction in a Technological World*, eds. Paul Leonardi, Bonnie Nardi, and Jannis Kallinikos. Oxford University Press.

Burrell, J., & Anderson, K. (2009). I have great desires to look beyond my world: Trajectories of information and communication technology use among Ghanaians living abroad. *Media, Culture & Society, 10*(2), 203-224.

Burrell, J., & Toyama, K. (2009). What constitutes good ICTD research? *Information Technologies & International Development, 5*(3), 82-94.

Callon, M. (1986). Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay. In Law, J. (ed.), *Power, Action and Belief: A New Sociology of Knowledge?* Routledge and Kegan Paul, London.

Callon, M. (1991). Techno-economic networks and Irreversibility. In Law, J. (ed.), *A Sociology of Monsters: Essays on Power, Technology and Domination.* Routledge, London.

Caers, R., De Feyter, T., De Couck, M., Stough, T., Vigna, C., & Du Bois, C. (2013). Facebook: A Literature Review. *New Media & Society, 15*(6), 982-1002.

Census of India. (2001). http://www.censusindia.gov.in

Chandrasekharan, B. (2009, August 7). Community Radio in India Includes Report on Eclipse, 'Bundeli Idol'. *Idea Lab.* Retrieved December 18, 2013 from www.pbs.org.

Chaudhri, R., Borriello, G., & Anderson, R. (2012). Pervasive Computing Technologies to Monitor Vaccine Cold Chains in Developing Countries. *IEEE Pervasive Computing. Special issue on Information and Communication Technologies for Development.*

Cross, A., Bayyapunedi, M., Cutrell, E., Agarwal, A., & Thies, W. (2013, April). Type-Righting: Combining the Benefits of Handwriting and Typeface in Online Educational Videos. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 793-796).

Cross, A., Cutrell, E., & Thies, W. (2012, October). Low-Cost Audience Polling Using Computer Vision. In *Proceedings of the 25th annual ACM symposium on User Interface Software and Technology* (pp. 45-54).

De Paula, R. A., & Director-Fischer, G. (2004). *The construction of usefulness: How users and context create meaning with a social networking system.* University of Colorado at Boulder.

Dell, N., & Borriello, G. (2013, January). Mobile tools for point-of-care diagnostics in the developing world. In *Proceedings of the 3ʳᵈ ACM Symposium on Computing for Development.*

Donner, J. (2008). Research Approaches to Mobile Use in the Developing World: A Review of the Literature. *The Information Society, 24*(3), 140-159.

Donner, J. (2009). Blurring Livelihoods and Lives: The Social Uses of Mobile Phones and Socioeconomic Development. *Innovations: Technology, Governance, Globalization, 4*(1), 91-101.

Dourish, P. & Mazmanian, M. (2011). Media as Material: Information Representations as Material Foundations for Organizational Practice. Working Paper for the *Third International Symposium on Process Organization Studies.*

Dourish, P., & Mainwaring, S. D. (2012, September). Ubicomp's Colonial Impulse. In *Proceedings of the ACM Conference on Ubiquitous Computing* (pp. 133-142).

Ellison, N.B., Steinfield, C., & Lampe, C. (2007). The Benefits of Facebook "Friends": Social Capital and College Students' Use of Online Social Network Sites. *Journal of Computer-Mediated Communication 12*(4), 1143-1168.

Escobar, A. (1995). *Encountering Development: The Making and Unmaking of the Third World.* Princeton: Princeton University Press.

Escobar, A. (2010). Latin America at a Crossroads: Alternative modernizations, post-liberalism, or post-development? *Cultural Studies, 24*(1), 1-65.

Fisher, M. (2012, May 18). Facebook's Amazing Growth in the Developing World. The Atlantic. Retrieved December 18, 2013, from http://www.theatlantic.com.

Fountain, R. M. (1999). Socio-scientific Issues via Actor Network Theory. *Journal of Curriculum Studies, 31*(3), 339-358.

Freire, P. (1972). *The Pedagogy of the Oppressed.* London: Sheed and Ward.

Ganesh, I. M. (2010). Mobile love videos make me feel healthy: Rethinking ICTs for development. *IDS Working Papers*, 2010: 01-43.

Gandhi, R., Veeraraghavan, R., Toyama, K., & Ramprasad, V. (2009). Digital Green: Participatory Video and Mediated Instruction for Agricultural Extension. *Information Technologies & International Development, 5*(1), 1-15.

Gartner, J., & Wagner, I. (1996). Mapping Actors and Agendas: Political Frameworks of Systems Design and Participation. *Human-Computer Interaction, 11*(3), 187-214.

Gaver, W. W. (1991, March). Technology Affordances. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 79-84).

Gee, J. P. (2004). *Situated Language and Learning: A Critique of Traditional Schooling.* New York: Routledge.

Gell, A. (1998). *Art and Agency: An Anthropological Theory.* Oxford: Clarendon.

Glaser, B. G., & Strauss, A. L. (2012). *The discovery of grounded theory: Strategies for qualitative research.* New Brunswick, N.J: Aldine Transaction.

Government of India. (1999). A Handbook of Copyright Law. New Delhi, India: Ministry of Human Resource Development. Retrieved December 18, 2013 from http://education.nic.in

Grandin, I. (1989). *Music and Media in Local Life: Music Practice in a Newar Neighbourhood in Nepal.* Dissertation. Linkoping University, Department of Communication Studies.

Granovetter, M. (1973). The Strength of Weak Ties. *American Journal of Sociology, 78*(6), 1360-1380.

Greene, P. D. (2001). Authoring the Folk: the crafting of a rural popular music in south India. *Journal of Intercultural Studies, 22*(2), 161-172.

Hanseth, O., Aanestad, M., & Berg, M. (2004). Actor-Network Theory and Information Systems. What's so special? *Information Technology & People 17*(2), 116-123.

Heilbroner, R. L. (1967). Do Machines Make History?. *Technology and Culture, 8*(3), 335-345.

Hess, L. (2010, April). Kabir in Schools: Pilot Project in Dewas & Ujjain Districts of Madhya Pradesh. Final Report.

Hess, L. (Forthcoming in 2014). *Bodies of Song: Kabir Oral Traditions and Performative Worlds in North India.* Oxford University Press.

Horst, H. A., & Miller, D. (2006). *The Cell Phone: An Anthropology of Communication.* Berg.

Ilahiane, H. & Sherry, J. (2008). Joutia: street vendor entrepreneurship and the informal economy of information and communication technologies in Morocco. *The Journal of North African Studies, 13*(2).

Ito, M., Gutierrez, K., Livingstone, S., Penuel, B., Rhodes, J., Salen, K., Schor, J., Sefton-Green, J., & Watkins, S. (2013). *Connected Learning: An Agenda for Research and Design.* Digital Media and Learning Research Hub, Irvine, CA, USA.

Jeffrey, C. (2010). *Timepass: Youth, class, and time among unemployed young men in India.* Stanford University Press.

Jenkins, H. 2006. *Convergence Culture: Where Old and New Media Collide.* New York University Press.

Jenkins, H. (2009). *Confronting the Challenges of Participatory Culture: Media Education for the 21st century.* MIT Press.

Johnson, K. (2000). *Television and Social Change in Rural India.* Sage Publications.

Kabir, Hess, L., & Simha, S. (2002). *The Bijak of Kabir*. Oxford University Press.

Kam, M., Mathur, A., Kumar, A., & Canny, J. (2009, April). Designing Digital Games for Rural Children: A study of traditional village games in India. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 31-40).

Kleine, D. (2013). *Technologies of Choice?: ICTs, Development, and the Capabilities Approach.* MIT Press.

Kocaballi, A. B. (2010). Towards Agency Sensitive Design. In *Participatory Design Conference, Doctoral Consortium, Sydney.*

Kolko, B. E., & Putnam, C. (2009, April). Computer Games in the Developing World: The Value of Non-Instrumental Engagement with ICTs, or Taking Play Seriously. In *Proceedings of the Fourth International Conference on Information and Communication Technologies and Development (ICTD)* (pp. 46-55).

Kraal, B. J., Popovic, V., Chamorro-Koc, M., & Blackler, A. L. (2011, November). An Actor-Network Research Frame for Analysing Complex Socio-Technical Situations. In *4th World Conference on Design Research, IASDR 2011.*

Kumar, H. (2006). Folk Media and Rural Development. *Indian Media Studies Journal 1*(1).

Kumar, N., Chouhan, G., & Parikh, T. (2011, May). Folk Music Goes Digital in India. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 1423-1432).

Kumar, N., & Parikh, T. S. (2010, April). New media and folk music in rural India. In *CHI'10 Extended Abstracts on Human Factors in Computing Systems* (pp. 3529-3534).

Kumar, N., & Parikh, T. S. (2013, April). Mobiles, music, and materiality. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 2863-2872).

Kumar, N., & Rangaswamy, N. (2013, April). The mobile media actor-network in urban India. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 1989-1998).

Kuriyan, R., Ray, I., & Toyama, K. (2008). Information and Communication Technologies for Development: The Bottom of the Pyramid Model in Practice. *The Information Society 24*(2), 93-104.

Lal, D. (1985). *The Poverty of "Development Economics".* Harvard University Press.

Latour, B. (1987). *Science in Action: How to Follow Scientists and Engineers through Society.* Harvard University Press.

Latour, B. (1988). *The Pasteurization of France.* Harvard University Press.

Latour, B. (1996). *Aramis, or, the Love of Technology (Vol. 1996).* Harvard University Press.

Latour, B. (2005). *Reassembling the Social: An Introduction to Actor-Network-Theory.* Oxford University Press.

Larkin, B. (2008). *Signal and Noise: Media, Infrastructure, and Urban Culture in Nigeria.* Durham: Duke University Press.

Law, J. (2009). Actor-Network Theory and Material Semiotics. *The New Blackwell Companion to Social Theory.* Oxford: Blackwell.

Lent, J. A. (1980). Grassroots Renaissance; Folk Media in Third World Nations. *Folklore, 91*(1), 78-91.

Liang, L. (2005). Porous Legalities and Avenues of Participation. *Sarai Reader, 5*(1), 6-17.

Livingstone, S. (2008). Engaging with Media - a Matter of Literacy? *Communication, Culture & Critique, 1*(1), 51-62.

Maanen, J. V. (2011). Tales of the field: On writing ethnography. University of Chicago Press.

Magaudda, P. (2011). When materiality 'bites back': Digital music consumption practices in the age of dematerialization. *Journal of Consumer Culture, 11*(1), 15-36.

Manuel, P. (1993). *Cassette Culture: Popular Music and Technology in North India.* University of Chicago Press.

Marcus, G. E. (1995). Ethnography in/of the World System: The Emergence of Multi-Sited Ethnography. *Annual Review of Anthropology, 24*, 95-117.

Mathur, A., Ramachandran, D., Cutrell, E., & Balakrishnan, R. (2011, August). An Exploratory Study on the Use of Camera Phones and Pico Projectors in Rural India. In *Proceedings of the 13th International Conference on Human Computer Interaction with Mobile Devices and Services* (pp. 347-356).

Matthee, K., Mweemba, G., Pais, A. V., Rijken, M., & Van Stam, G. (2007). Bringing Connectivity to Rural Zambia Using a Collaborative Approach. In *Proceedings of the Second International Conference on Information and Communication Technologies and Development* (pp. 1-12).

Media Piracy in Emerging Economies. (2011). ed. Joe Karaganis (Social Science Research Council).

Menezes, J. (2011, December 9). Why this Kolaveri a rage-u on Social Media? Retrieved December 18, 2013 from http://www.socialsamosa.com.

Miller, D. (1998). *Material Cultures: Why Some Things Matter.* University Of Chicago Press.

Miller, D. (2011). *Tales from Facebook.* London: Polity.

Miller, D., & Slater, D. (2000). *The Internet: An Ethnographic Approach.* London: Berg.

Monteiro, E. (2000). Actor-Network Theory. In Ciborra, C. (Ed.), *From Control to Drift: The Dynamics of Corporate Information Infrastructure.* Oxford University Press.

Mukhopadhyay, D. (2008). Folk Arts and Traditional Media for Peace, Education and Conflict Resolution. Final Report.

Nelson, N. & Wright, S. (1995). Power and Participation. In Nelson, N. and Wright, S. (eds) *Power and Participatory Development: Theory and Practice.* London: Intermediate Technology Publications.

Ng'ombe, J. L. (2000). The Communication Model and Folk Media in Development. Sustainable Development Dimensions. Food and Agriculture Organization. Retrieved December 18, 2013 from http://www.fao.org.

Norman, D. A. (1988). *The Design of Everyday Things.* New York: Doubleday.

Norman, D. A. (1999). Affordances, Conventions, and Design. *Interactions, 6*(3), 38-41.

Obregon, R., Chitnis, K., Morry, C., Feek, W., Bates, J., & Galway, M. Achieving polio eradication: A review of health communication evidence and lessons learned in India and Pakistan. *Bulletin of the World Health Organization 87*, 624-630.

Oeldorf-Hirsch, A., Donner, J., & Cutrell, E. (2012, October). How bad is good enough?: Exploring mobile video quality trade-offs for bandwidth-constrained consumers. In *Proceedings of the 7th Nordic Conference on Human-Computer Interaction: Making Sense Through Design* (pp. 49-58).

Orlikowski, W. J. (2009). The sociomateriality of organisational life: considering technology in management research. *Cambridge Journal of Economics 34*, 125-141.

Panford, S. (2001). Using Folk Media in HIV/AIDS Prevention in Rural Ghana. *American Journal of Public Health 91*, 1559-1562.

Patel, N., Chittamuru, D., Jain, A., Dave, P., & Parikh, T. S. (2010, April). 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* (pp. 733-742).

Pawar, U. S., Pal, J., Gupta, R., & Toyama, K. (2007, April). Multiple Mice for Retention Tasks in Disadvantaged Schools. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 1581-1590).

Peshkin, A. (1988). In Search of Subjectivity - One's Own. *Educational Researcher, 17*(7), 17-21.

Peters, A., Oren, M., & Bidwell, N. (2012, May). Namibian and American Cultural Orientations toward Facebook. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems Extended Abstracts* (pp. 2603-2608). .

Pierce, J., & Paulos, E. (2010, August). Materializing Energy. In *Proceedings of the 8th ACM Conference on Designing Interactive Systems* (pp. 113-122).

Pinch, T. J. & Bijker, W. E. (1984). The Social Construction of Facts and Artefacts: or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other. *Social Studies of Science, 14*(3), 399-441.

Prahalad, C. K. (2005). *The Fortune at the Bottom of the Pyramid.* Upper Saddle River, NJ: Wharton School Pub.

Prahalad, C. K., & Mashelkar, R. A. (2010). Innovation's Holy Grail. *Harvard Business Review, 88*(7/8), 132-141.

Press Information Bureau, Government of India. (2012). TRAI Exempts limit of 200 SMS Per day Per SIM for Machine to Machine and Person to Machine Messages. Retrieved December 18, 2013 from http://pib.nic.in.

Radjou, N., Prabhu, J., & Ahuja, S. (2012). *Jugaad Innovation: Think Frugal, Be Flexible, Generate Breakthrough Growth.* Wiley.com.

Ramachandran, D., Goswami, V., & Canny, J. (2010, December). Research and Reality: Using Mobile Messages to Promote Maternal Health in Rural India. In *Proceedings of the Fourth International Conference on Information and Communication Technologies and Development.*

Rangaswamy, N., & Cutrell, E. (2012, March). Anthropology, Development and ICTs: Slums, Youth and the Mobile Internet in Urban India. In *Proceedings of the Fifth International Conference on Information and Communication Technologies and Development* (pp. 85-93).

Rangaswamy, N., & Densmore, M. (2013, December). Understanding Jugaad: ICTD and the Tensions of Appropriation, Innovation and Utility. In *Proceedings of the Sixth International Conference on Information and Communications Technologies and Development: Notes-Volume 2* (pp. 120-123).

Rangaswamy, N. & Nair, S. (2011). The Mobile Phone Store Ecology in a Mumbai Slum Community: Hybrid Networks for Enterprise. *Information Technologies and International Development, 16*(2), 51-65.

Rangaswamy, N., & Sambasivan, N. (2011). Cutting Chai, Jugaad, and Here Pheri: Towards UbiComp for a Global Community. *Personal and Ubiquitous Computing, 15*(6), 553-564.

Ratan, A. L., & Bailur, S. (2007, December). Welfare, Agency and "ICT for Development". In *Proceedings of the Second Interational Conference on Information and Communication Technologies and Development* (pp. 1-12).

Reda, A., Shah, S., Tiwari, M., Lillie, A., & Noble, B. (2012, March). Social Networking in Developing Regions. In *Proceedings of the Fifth International Conference on Information and Communication Technologies and Development* (pp. 94-103).

Rosner, D. K. (2012, February). The Material Practices of Collaboration. In *Proceedings of the ACM 2012 conference on Computer Supported Cooperative Work* (pp. 1155-1164).

Schatzki, T. R. (1996). *Social Practices: A Wittgensteinian Approach to Human Activity and the Social.* Cambridge University Press.

Scott, J. C. (1998). *Seeing Like a State: How Certain Schemes to Improve the Human Condition have Failed.* Yale University Press.

Sen, A. (1999). *Development as Freedom.* New York: Knopf.

Sey, A. (2011). ?We use it different, different?: Making sense of trends in mobile phone use in Ghana. *New Media & Society, 13*(3), 375-390.

Sharma, D. (2007, November 14). Nautanki vs. Mass media: Exploring the Role of Community Folk Performances in the Age of New Media Forms and Technology. *Paper presented at the annual meeting of the NCA 93rd Annual Convention.* Chicago, Illinois.

Silverstone, R. (1999). What's New about New Media? *New Media & Society, 1*(10), 10-12. Sundaram, R. (2010). *Pirate Modernity: Delhi's Media Urbanism.* Routledge.

Socialbakers.com. (2011). The rise of Asia and Africa on Facebook, statistics by continent! Retrieved December 18, 2013 from http://www.kbc.co.ke/news.asp?nid=70049.

Smyth, T. N., Kumar, S., Medhi, I., & Toyama, K. (2010, April). Where There's a Will There's a Way: Mobile Media Sharing in Urban India. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 753-762). ACM.

Sundström, P., Taylor, A., Grufberg, K., Wirström, N., Solsona Belenguer, J., & Lundénl, M. (2011, May). Inspirational Bits: Towards a Shared Understanding of the Digital Material. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 1561-1570).

Takhteyev, Y. (2012). *Coding Places: Software Practice in a South American City.* MIT Press.

Taylor, A. S. (2011, May). Out there. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 685-694).

Tholander, J., Normark, M., & Rossitto, C. (2012, May). Understanding Agency in Interaction Design Materials. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 2499-2508).

Truman, H. S. (1949). Truman's Inaugural Address, January 20, 1949. Retrieved December 18, 2013 from http://www.presidency.ucsb.edu/ws/index.php?pid=13282 ?axzz1vI9oQvaQ

Vashistha, A., & Thies, W. (2012). IVR Junction: Building Scalable and Distributed Voice Forums in the Developing World. In *Proceedings of the 6th USENIX/ACM Workshop on Networked Systems for Developing Regions.*

Virmani, S. (2008). *Had-Anhad: Bounded-boundless: Journeys with Ram & Kabir.* [Bangalore, India]: Kabir Project.

Weiner, E. (2009). *The Geography of Bliss: One Grump's Search for the Happiest Places in the World.* New York: Twelve.

Whittle, A. & Spicer, A. Is Actor Network Theory Critique? *Organization Studies, 2008*(29), 611-629.

Williams, R. (1983). *Keywords.* London: Fontana.

Woolgar, S. (1991). Configuring the User: The Case of Usability Trials. In J. Law (Ed.), *Sociology of Monsters: Essays on Power, Technology and Domination* (57-102). London: Routledge.

Wyche, S.P., Forte, A. & Schoenebeck, S.Y. (2013a, April). Hustling Online: Understanding Consolidated Facebook Use in an Informal Settlement in Nairobi. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.* (pp. 2823-2832).

Wyche, S.P., Schoenebeck, S.Y. & Forte, A. (2013b, February). Facebook is a Luxury: An exploratory study of social media use in rural Kenya. In *Proceedings of the 2013 Conference on Computer Supported Cooperative Work* (pp. 33-44).