



Mobile technology in the village: ICTs, culture, and social logistics in India

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Mobile technology is currently emerging as the first extensive form of electronic communication system in many regions of Africa and Asia. This article analyses the appropriation of mobile phones in rural India by exploring what new social alternatives mobile phones enable and how these new social constellations relate to culture and cultural change. The ethnographic description relates phone usage to other communication patterns and ongoing processes of transformation. The article shows how the appropriation of phones draws from the local cultural and social context, but also that phones facilitate new patterns that show great similarity with social processes in other places where phones have been introduced as the first form of communication technology, such as the increased multiplicity of social contacts and the greater efficiency of market relationships. I argue that mobile technology amplifies ongoing processes of cultural change but does so selectively, so that it brings about the homogenization of 'social logistics'.

This article presents an ethnographic analysis of the appropriation of mobile technology in rural India, where, as in many regions of Africa and Asia, mobile phones are the first form of electronic communication technology to be widely used. Since mobile networks are cheaper to build than landline networks, and (unlike computers) communication by phone does not require literacy, mobile phones are now increasingly adopted in regions with no extensive prior form of communication technology. The rate of mobile phone sales in India has been record-breaking ever since the introduction of mobile technology in 1995. By October 2006, there were 130 million mobile phones in India, with six million new phones being purchased every month. With the arrival of third-generation telephony and growing sales in rural areas, Indian mobile phone users are going to exceed the 300 million mark by 2011 (*Hindustan Times* 2006; Sengupta 2006).

The new communication systems are influencing and drawing from local social, cultural, and political processes. Mobile technology, like other ICTs (information and communication technologies), facilitates the dispersion of transnational capital. If globalization is understood very broadly as an increasing porosity of boundaries and changing experience of time and place (see, e.g., Hall 1991; Harvey 1989), mobile

phones contribute to such processes by facilitating a multiplicity of relationships in areas that used to be relatively isolated. ICTs' ability to influence sociality's place-based conditions of existence and forms makes them anthropologically interesting. Giddens (1990: 18) designates the ability to foster relationships with absent others a central facet of modernity's globalizing dynamism. In a similar vein, Castells (1996; Castells, Fernández-Ardèvol, Qui & Araba 2007) emphasizes how 'telephony' assists in privileging individual projects and interests over the norms of society. Inherent in his thinking is the association of the triumph of 'individualism' with agency, while 'traditional' social networks are seen as obstacles for agency.

My article both draws from and contributes to the understanding of the role of cultural meanings in technology studies. In the process, I explore anthropological understandings of agency and practice that have questioned individualistic conceptions of agency such as the ones mentioned by Giddens and Castells. Technology studies have, over the past decades, acknowledged the role of culture in the adoption of technology. The change of terminology from 'the use' or 'the adoption of technology' to 'the appropriation of technology' exemplifies the cultural shift. Although the terms 'appropriation' as well as 'culture' have become ubiquitous in technology studies, the meaning of culture is rarely elaborated. Appropriation generally refers to how artefacts are used, but also to how they are adapted in use and subsequently interpreted (Mackay & Gillespie 1992). Hård and Jamison (2005) define cultural appropriation as discursive, institutional, and daily practices through which technology is given a human meaning. Questions of cultural change have encouraged technology studies to pose similar questions to anthropological works that deal with the relationship between action and structure (e.g. Bourdieu 1992 [1980]; Ortner 1989; Sahlins 1987 [1985]). Hekman (1995) advocates the idea of culture as both restricting and enabling agency. Subjects are constructed through discursive formulations of a given culture and, at the same time, discursive formulations provide a possibility for agency. Contrary to Hård and Jamison (2005: 14), I follow practice theories in not distinguishing institutional and daily practices as a separate domain from discursive systems.

The lion's share of technology studies – alongside research on the appropriation of mobile phones – has focused on Western countries, which has led to a tendency to centre on Western-based concepts. Katz and Aakhus (2002), who have aggregated much of the recent research on mobile phone usage in Western countries in an edited volume, conclude that mobile phones alter the nature of public space and the dynamics of private relationships. Ling (2004), who has researched the appropriation of mobile phones in Norway, represents the current mainstream in social science technology studies in moving beyond both technological and social determinism and employing the domestication approach, which centres on questions of how technology is adapted to everyday life and how everyday life, in turn, is adapted to technology. Ling's focus is on drawing generalizations concerning the social and behavioural patterns associated with mobile phone usage, but he does not discuss the meanings of the emerging social patterns he describes.

To date, both the media and formal evaluations of development projects have provided the main sources of reports on the impacts of mobile phone communication in developing countries. The few studies of the use of such technology in countries where mobile phones have been adopted as the first major form of

communication technology are mainly survey-based studies and project evaluations that focus on questions of poverty reduction and empowerment. The Grameen Bank project in Bangladesh offers a convincing case for the use of mobile phones in development. The bank has been lending women money to obtain mobile phones since 1997, providing 70 million people with access to phone networks. According to Bayes (1999), village pay phones have delivered significant benefits to the rural poor. Phones are used to find market information related to agricultural production and have also provided access to the police and legislators. In Chennai, India, the Foundation of Occupational Development (FOOD) has given women micro-entrepreneurial training in marketing, but has also provided them with mobile phones. The phones have increased women's earnings and empowered them to take new initiatives (Loyola 2005). By using national statistics and survey materials from Tanzania, South Africa, and Egypt, Coyle (2005) demonstrates mobile phones' economic benefits in a report commissioned by Vodafone, a service provider company. She concludes that phones help access market information, save time, discover job and education opportunities, and bring security. Similar observations were made by Bruns, Robert, and Chongchit Sripun Tiam-Tong (1996) in nine villages in Thailand. Rural telephones facilitate migration for work and study, thus mitigating the disruption of social networks and helping to maintain or increase social capital. The availability of information on prices, improved co-ordination of travel arrangements, and reductions in transactions costs all contribute to the acceleration of ongoing processes of change.

My approach in studying the appropriation of mobile phones in rural India is similar to that of Horst and Miller (2005)¹ in that I prefer to frame the research using anthropological concepts of culture as well as more 'local' cultural domains, instead of the vocabulary of the domestication paradigm.² While the paradigm does make it possible to grasp how society shapes technology and how, conversely, technologies can have effects on the organization of society, it has been developed to understand the acquiring of technology by Western households, how users position technology in their homes while at the same time making it useful and meaningful. Consequently, the approach has its roots in Western categories (such as the concept of domesticity itself). In order to avoid privileging Western categories and to analyse the meanings of phone use, I examine how the appropriation of phones draws from culture and, conversely, contributes to changes in culture and society. I will explore both the new social forms that mobile phones enable and how such novel social constellations relate to culture and cultural change. I introduce the concept of 'social logistics' as a tool to develop the understanding of the relationship between technology, culture, and social structure. Drawing from Schneider (1980), I perceive culture as relating to social organization by presenting indigenous categories of social organization, but my approach differs from that of Schneider in that I view culture as being in constant flux and also because the focus of this article is on the reinterpretations of cultural categories in social interaction. Such symbolic fields as kinship and rituals represent dominant practices and enduring meaning structures which cannot be ignored by the villagers; and nor can they be overlooked when interpreting village life. Nevertheless, these structures exist in motion, providing a basis for the generation of diverse and even conflicting positions and views. Consequently, my interest lies in looking at dominant practices but also at the multiplicity enabled by symbolic structures as well as alternatives and inconsistencies.

Although this article focuses on mobile phone users' agency, I acknowledge that there are other agents, such as the state and multinational companies, that play central roles in shaping the mobile market's recent expansion into new regions. States can both enable private service providers' business through deregulation and play a role in ensuring that the new technologies also benefit the poorest strata of society. Indeed, the Indian state has successfully contributed to the growth of the telecommunications industry through government deregulation and re-regulation (Singhal & Rogers 2001). The shift of most of the mobile telecommunications industry's growth and focus to developing nations has meant that new multinational service provider companies from Asia, Africa, Latin America, and the Middle East have entered the global mobile market. One of the service provider companies in India, Vodafone,³ is mainly foreign-owned, but the locally owned service providers (Airtel, Reliance, and Tata) dominate the Indian market. These companies play a significant role in where and how the impacts of the telemarket's expansion flow. For example, having mostly to import their mobile technology can adversely affect the national budgets of developing countries.

I start off by describing the location of my research as well as the evolving mobile market. The following ethnographic description relates the phone usage to other communication patterns and ongoing processes of change. My interest in the topic grew from my experiences in Janta, a village in the Bankura district of West Bengal. Janta is a multi-caste village with 2,328 inhabitants (author's own census, 2004), the majority of whom earn their livelihood from paddy cultivation and vegetable farming. The dominant caste, both numerically and in terms of land ownership, is the Tilis (50 per cent). Other major caste groups are the Bagdis (15 per cent) and Casas (16 per cent). Most Tilis and Casas own land, and most Bagdis, who are classified as scheduled castes, earn their livelihood by means of daily labour: agricultural work, or work in the brick factories. When I did fieldwork there in 1999-2000, the region's villages were not covered by a working phone system. One had to travel to town to make a call, but people seldom did as the inadequate phone system meant they could not call other villages. When I returned to the village in 2003, the district had just been covered by a mobile phone network.

I have interviewed eighty-seven of Janta's one hundred phone owners: ten in 2005 and seventy-seven in 2007-8. I also filmed a hundred phone calls and interviewed the callers in 2005. In addition to these materials, I draw from my prior research in the region to relate phone use to the social and cultural system that prevailed before the introduction of phones. I lived in the village for ten months in 1999-2000 and returned to Bankura for four more months of fieldwork in 2003 and 2004. My earlier research in Janta focused on gender, politics, and exchange relationships (Tenhunen 2003; 2008; in press). The bulk of the earlier materials consists of seventy-six taped interviews with villagers and a complete household census of the village, but I also gathered many of my insights into village life through observation, participant-observation, and chatting. My research materials, which span over a decade and illuminate diverse spheres of social life, give unique scope for understanding the role of technology for social and cultural change. Despite their interest in domestication of technology in everyday life and cultural appropriation of technology, studies of the appropriation of technology tend to be based on materials that focus mainly on the use of technology. For instance, except for Horst and Miller (2006), studies of the use of mobile technology (such as Castells 1996; Coyle 2005; Katz & Aakhus 2002; Ling 2004) focus fairly narrowly on phone usage.

The mobile market

In 1999–2000, at a time when urban India was shifting towards the use of mobile phones and surfing the internet, most villagers in West Bengal had neither electricity nor landline phones. In 2002, the BSNL⁴ (a government-owned service provider that carries out the national telecom policy's objectives) established a mobile phone network that covered rural West Bengal. By 2007 all the private service providers had set their operations in Bankura. Similar development has taken place throughout rural India. In 1988 only 4 per cent of Indian villages had access to a telephone, but by 2000 nearly half of all Indian villages were connected by some type of telephone service (Singhal & Rogers 2001: 204). Between 2005 and 2007, teledensity increased in rural India from 2 per cent to 5 per cent⁵ owing to the state starting to subsidize the building of mobile networks, and operators turning their interest to rural markets after the saturation of urban markets.

Mobile phones are also purchased where there is no electricity – phone owners simply commute to villages or neighbourhoods that do have electricity to charge their phone batteries. The mobile phone has become the home's second electric gadget after the radio. Among the first to buy mobile phones were car and tractor drivers, who found phones useful in helping them to stay in touch with customers and call for help if they experienced problems on the road. By 2003, there were four mobile phones in Janta and its two small, adjacent villages, and when I returned to the village in 2005, there were ten phones purchased by large landowners and small-scale businessmen. By 2007, the number of phones had risen to 100 and the phone density to four phones per hundred persons. The phone density is still low in comparison to urban India (twenty-six in 2005⁶) because the price of even the cheapest mobile phone (€20) equals two-thirds of a labourer's monthly salary. New phone owners included middle farmers, new micro-entrepreneurs and salesmen (insurance and savings schemes), carpenters, self-taught village doctors, college students and graduates who give tuition, government employees, factory workers, and families who have a family member living and working outside the village. Whereas eleven persons held jobs outside the village in 2005, by 2007 this number had risen to twenty-five. The increase in teledensity had occurred as a result of the new prosperity but also thanks to the reduced price of the cheapest hand-sets from around Rs 3,000 to Rs 1,000. In turn, service providers offered tempting schemes and inexpensive calls. Most generous of them was a plan by Tata Indicom under which there were no charges on mobile calls within the company's network for a two-year period.

Despite the low teledensity, phone services became available to the entire village as soon as the area was covered by a network, thanks to BSNL, which placed wireless⁷ public phones in all villages. As a fairly large village, Janta received three public phones for its different neighbourhoods. These phones' batteries can be charged by means of solar power, so they can also be operated in villages that lack electricity. Indeed, three of the five public phones whose use I studied were in neighbourhoods with no electricity. The BSNL places public phones in shops, whose owners make a small profit from operating the phone in return for ensuring that someone answers it. By 2007, the number of public phones had risen to eight as private mobile service providers had introduced their own public phone systems. Every shop now has a phone that utilizes the mobile phone network but looks like a landline phone.

Callers usually come to use the phone with a small piece of paper on which the phone number is written in Western numerals (as on the phone) and have someone

else do the dialling: the person in charge of operating the phone or anyone else who is literate enough. The cost of call per minute varies from Rs 1 to 2 depending on the calling scheme. Phone keepers of public phones may also charge Rs 2 for delivering news of an incoming call. Since daily labourers earn around Rs 50-80 (€1-1.5) a day, phone use is expensive: receiving and making a short phone call cost around 8 per cent of a labourer's daily earnings, which is equal to the cost of one person's daily portion of rice. Privately owned mobile phones are shared much like public phones: for a fee, villagers also call from private phones. Instead of ending the phone sharing, the rise in teledensity has led to phone sharing by smaller units. Each *para* (neighbourhood) now has a public phone, and many neighbours, who are often relatives, share a mobile phone.

SMS (phone text) messages, which most service providers offer cheaply or free up to a limit, are an under-used resource. Only a few college students, a few shop owners, and some small entrepreneurs have sent or received them. Most villagers are not able to exchange messages because the majority of the phones require the ability to read and write, using Latin or Hindi characters instead of Bengali ones. Even those villagers who have studied Hindi and English are not comfortable reading and writing these languages.

Calls are not made daily, but weekly or even monthly. Callers go to phone shops only sporadically, and the number of daily calls at the individual shops fluctuates between three and seven. Moreover, owing to the heavy load on the networks, calls are not always successful. Consequently, filming 100 phone calls required long hours of hanging around phone shops. The majority of the calls (58 per cent) were made to villages in the district – 12 per cent of the calls were to other districts, 16 per cent to other states, and one call was made to the USA. Table 1 provides a break-down of the call topics. As the table indicates, 66 per cent of the calls (66 calls, $N = 100$) deal with only one topic; the rest include various types of messages.

Table 1. Topic of the call.

Organizing a call	31
Exchanging general news	31
Business	23
Visiting and travelling	17
Giving or receiving help	13
News about health	11
Organizing rituals	9
Marriage arrangements	8
School	4
Only arranging a call	26
Only business	17
Only general news	9
Only arranging rituals	4
Only marriage arrangements	3
Only help request	3
Only visiting	3
Only illness	1
<i>N</i>	100

Note: The table lists the topics of 100 calls. Since most of the calls dealt with several topics, I have listed each topic of a single call separately.

As Figure 1 illustrates, the actual talking times are short. The shortest of the calls are often about making an appointment for a call, but they can also be two parties merely asking how the other is and assuring each other that everything is fine. Whereas these types of calls, during which no clear message is exchanged, formed the majority of the mobile calls in Jamaica (Horst & Miller 2005), in my sample, they formed a minority, 9 per cent of the calls.

Calls are not kept brief because of cultural ideals of keeping conversations short, but rather because villagers aim to keep costs low – when people receive calls from relatives who can afford long calls, they exchange detailed information about kin and family.

Calling in the context of village sociality

As Table 1 shows, most calls are about organizing a phone call. In the village, the ringing of a phone is the start of a long chain of messages. To call a person in a village, one first needs to ask the person answering the neighbourhood phone to deliver a message to the person to whom one wants to speak that he/she should wait by the neighbourhood phone at a specific time. Sometimes, especially in the case of urgent matters, callers simply relate their entire message to whoever has answered the phone, requesting that this person forward the message. For example, I observed an occasion when a man who happened to be waiting for a call answered the phone when it rang and agreed to deliver an important message: the caller wanted his father to know that he need not take an agricultural loan from the co-operative bank.

Those answering the phone may also give information on behalf of the person with whom the caller wants to talk. The shop owner, for instance, told a caller that the person to whom he wanted to speak had left for Maharashtra. He then sent people to find more information about the man who had left the village. The man's family could not be found, but the neighbours could give fairly exact information regarding his movements and schedule. When the shop owner realized that the call came from the vicinity of the railway station to which the man in question was allegedly heading, he reasoned that the man would probably show up at the caller's house and would stay the night. As these examples illustrate, most calls are public happenings, and it was the calls' public nature that helped me research phone usage.⁸

The public nature of the calls as well as the collective manner of operating the phones draws from village sociality and earlier patterns of communication. These cultural grounds explain the ease of phone sharing in the village: except for micro-entrepreneurs, who are often on the move and can benefit economically from private

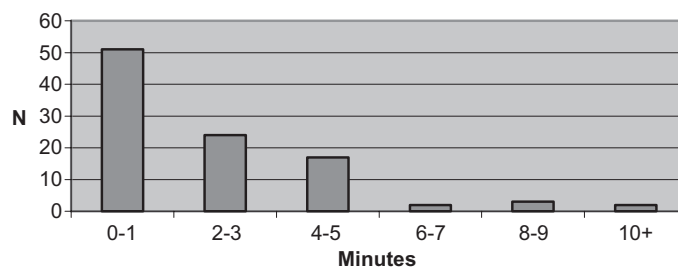


Figure 1. Calling times.

ownership, villagers do not have strong incentives for purchasing personal phones. As most modern scholars of village India have been at pains to prove, Indian villages have never been the kind of static, self-sufficient communities described by the early British colonial observers, or by Maine and Marx. The social networks of rural West Bengal, India's most densely populated state (Dyson 2004), have always been well knit. Local identity has always emerged in relation to broader networks – other villages, districts, and cities – through trade and kinship. Connections did not start with the use of information technology, although phones as well as radios and television sets have increased and intensified such links.

The nearest neighbouring villages are almost adjacent to Janta. Many people from Janta commute daily to Vishnupur (a town 12 kilometres away): farmers sell vegetables at the marketplace, a few villagers have office jobs, college boys and girls attend school there, and labourers go for work. Unlike many of the remotest villages in the district, Janta has good road connections. The villagers can commute by bike and bus to villages and cities further away. Engine sounds rarely disturb the village's peaceful environment, although there were four cars, five tractors, and several motorbikes owned by villagers during my fieldwork periods. Janta also has a post office and daily mail delivery.

Literate villagers used to exchange information on crucial news such as serious illnesses by letters, but calling has replaced most of the letter writing. According to the village Post Master, the flow of private letters first decreased and then stopped completely in 2007. He now only receives official letters to deliver. Even before the advent of phones, letter writing was, in practice, rare: for instance, a literate family whose life I observed closely received two letters during a ten-month period. Since even the literate part of the older generation is not used to writing, the letters tended to be brief rather than informative: one letter that I saw simply stated that 'your brother has been bitten by a snake', without any information about whether the brother was recovering. Letter writing was and still is more common among the younger generation, who are more literate than their elders. Letters (and their secret dissemination through trusted friends instead of the public mail system) offer boys and girls a concealed way of staying in touch with friends of the opposite sex against the will of family elders and the neighbourhood.⁹

Since radios and television sets preceded phones in the villages, prior to the building of mobile networks the villagers used to have better access to world news than to news of their relatives in other villages. A survey of five villages in Andhra Pradesh, Uttar Pradesh, and West Bengal found radios to be the most common mass media in rural India, followed by television: 77 per cent of the 150 households interviewed owned a radio and 9 per cent a television (Pigato 2001: 32). Radios are the most widely owned electrical device in Janta, too. Since the commercialization of Indian television and radio in the 1990s, they have become media that can help rural people to discover alternative life-styles, especially consumerist, urban models (Johnson 2001). The most popular television programmes in Janta are also Bengali and Hindi films and Bengali soap operas. However, despite the greater popularity of the commercial channels, public broadcasters have continued to educate rural viewers about issues such as nation building, birth control, public health, and agricultural methods (Johnson 2001; Mankekar 1993; Singhal & Rogers 2001). Television viewing is not limited to owners – middle-sized and large farmers – since they feel duty-bound to allow neighbours to watch their sets. As people from the caste neighbourhoods' different economic classes,

genders, and ages gather in front of these sets, television brings together people who otherwise would have not socialized for such lengthy periods of time (Johnson 2001). Movies, mainly popular Hindi and Bengali movies (in the past on videotapes, but since 2000, on DVDs), are also shown daily in the village movie hall, though by 2003 the village movie hall was facing severe competition from a few television owners who had acquired DVD players and started to show movies in return for a small fee. Thanks to DVD players, movies can now be shown in several neighbourhoods. Despite the disapproval of the elders in their households, some women did venture to see films in the village video hall, where women and men sit on separate sides. But now women can see films without having to leave their own neighbourhood: the women in a neighbourhood raise money (a few rupees per woman – the fee varies, depending on the size of the audience) to rent a DVD player, television, and a film.

Village exogamy is responsible for most of the connections between villages. As illustrated by my sample of sixty-seven women, of whom sixty-six had married outside their natal village, village exogamy is the dominant marriage form in the region (Tenhunen 2008). Village exogamy leads to connections between villages since marriages are not an end in themselves but a form of alliance creation – post-marital visitations and prestations are the essence of marriage alliances (Fruzzetti 1990 [1982]: 37). Women do not cut their ties to their natal families when they get married, as the two lines continue to interact in ritual as well as in other contexts, for instance economically.

Before the arrival of phones, news of relatives in other villages, of women's natal families and men's in-laws, was conveyed via letters (by the literate part of the village) and visitors. Visiting also meant being informed of other people's news (*khobor neua*) and delivering it to the relevant people in other villages, often on request. However, these visitor networks, on which villagers previously relied for news, were often slow and unreliable; consequently, villages were relatively isolated in comparison with urban areas. Women, for example, could not obtain news of a serious illness or the death of a close relative in time to view the body before the cremation and to participate in the death rituals. The inadequate communication infrastructure contributed to villagers' considerable autonomy from state authorities and services, too. The more remote the village, the smaller the chances were of asking for or getting help from outside in case of emergencies and conflicts. Public phones have not done away with the delivering of other people's news, but give the villagers closer mutual interaction than prior to their arrival, when there were fewer messages to deliver. In fact, phone owners are burdened by the number of messages that they have to deliver, while villagers complain that they do not deliver all the messages that they receive.

The kinship network

In addition to strengthening village sociality, phones have intensified the kinship system: 81 per cent of the calls that I filmed were made to relatives, 14 per cent to business associates, and 5 per cent to friends. Villagers emphasize the phones' usefulness in helping to reach relatives in order to invite them to attend rituals such as funerals and weddings. Phones have become an especially effective medium for discussing marriage arrangements. People inform one another of arranged marriages, ask for information about potential brides and grooms, ask advice about marriage offers, and deliver news of the acceptance or rejection of marriage proposals. The most decisive part of the marriage arrangement is when the groom's party comes to see the

potential bride. The girl and the boy can see each other and afterwards usually give their opinion of the marriage proposal, although marriages are sometimes arranged without the bride and groom's opinions being taken into consideration. Phones help with the arrangement of these meetings, and make it possible for potential grooms to see more potential brides (and vice versa) than was the case previously. Phones have also made it easier to express opinions about proposed marriage partners – rejection no longer needs to be conveyed face to face, but can be conveyed by phone. The increased exchange of information about possible spouses accentuates the dynamism of the marriage market along with the ensuing caste and class considerations.

Fathers are usually responsible for looking for suitable partners for their offspring. Mothers cannot go and find potential brides for their sons, and most certainly not grooms for their daughters, but they nevertheless participate in marriage arrangements by investigating suitable spouses through their networks. The introduction of a phone system to West Bengal has increased women's role in marriage negotiations. For instance, after the father of a prospective village bride had invited several mismatches to the house to see his daughter, the neighbouring women made a few phone calls, quickly arranging a meeting with a promising candidate: this potential groom owned some land, had a side business, and was known to be good natured and hardworking.

Although the majority of calls are made within kinship groups, phones also serve to extend villagers' connections. Phones help villagers keep in touch with those relatives who have emigrated to other districts or abroad. According to a woman whose son works outside West Bengal, they had only been able to talk to their son about once a year before the arrival of the village phone, whereas now the son calls his parents weekly. Increased contact with villagers who have moved away has resulted in a growth in the flow of information on employment opportunities outside the village. Although phones facilitate travelling and visiting, the major motivation for people to purchase phones is that they help to prevent expenditure on travel.

Not all calls are about getting help in dire circumstances, but the villagers perceive the ability to call for help as one of the phones' most crucial benefits. As a villager puts it:

For example, if someone's father dies, the daughters are able to go there immediately and see the body before the cremation. And if a relative gets into trouble, I can go there immediately. When my daughter was very ill, I went with her to Vellore. She suddenly lost consciousness and I was able to call a car immediately. This is the kind of convenience that we get from the phones.

After a severe hailstorm destroyed the farmers' spring crops in 2005, the villagers crowded the phone shops to inform their relatives of the disaster. Since the hailstorms did not hit the entire region, many were able to get help from relatives whose crops had not been destroyed.

Most phone calls take place within the neighbourhood, but phones also make it possible to maintain defiant and secret contacts and more efficiently than by secret letters. If villagers do not want their immediate neighbourhood and family to hear their call, they commute and make calls from other neighbourhoods and villages. This was how a few villagers who were wanted by the police were able to stay in touch with their family members in Janta even while in hiding elsewhere. A young woman walked to a distant neighbourhood to – unconventionally – discuss her own marriage's dowry arrangements with her married sister, who lived outside the village. Mobile phones

offer the possibility to move away so that fewer people are within hearing distance. It is, however, seldom possible to make a call in complete privacy in the village, as there are always people around. In times of dispute, phones offer the possibility to obtain support from a larger group of relatives and friends than that available in one's immediate neighbourhood. In extending and multiplying villagers' relationships, phones are conferring on village society much of the diversity of connectedness that is characteristic of urban settings.

Phones help villagers to strengthen their contact with relatives living in distant places. All service providers have introduced low rates, even free calls, to connections provided by the same service provider, which has resulted in a mushrooming of chains of relationships among people who share the same provider. Before these phone services were available, it was impossible for young men and women to maintain relationships with friends outside the village whom they had met in school and at college. A few young men have also established relationships with people in far-away places in West Bengal and in neighbouring states simply by dialling a random number and starting to chat.

Increased connections to the world outside the village may also slowly introduce changes to village politics, which has traditionally consisted of villagers having to rely on their village leaders in times of crisis. Politics is understood as morality, as the maintenance of just relationships, the mutually supportive relationships between a party and its supporters. Party members are supposed to show solidarity with one another and people expect help and support from the party. The party organization is a hierarchical system, much like a family, and the top level of the local party organization is expected to act as a patron to its followers. Most party leaders and activists come from the wealthy families; politics therefore entails 'little people' (*chotto lok*) seeking help and patronage provided by important men ('big people', *boro lok*).

The last two decades have witnessed the waning power of the party leaders. Thanks to their new prosperity, fewer people depend on the goodwill of village leaders who belonged to the dominant caste, Tilis. When a fight between neighbours occurred in the village in 2004, leaders were no longer able to settle the matter there, and the dispute had to be taken to court. At that time, the head of the panchayat (unit of the state-run system of local governance) was a scheduled caste man and Janta's representatives were two scheduled caste women. The rural society's new strata in local decision-making, women and scheduled caste representatives, hardly enjoy the same authority as did those representatives who were also Left Front leaders and great landowners. The quotas for low caste and female representatives in panchayats have decreased the power of village 'big men', but they have also shifted power to the party and panchayat officials outside the village. The new phone networks accentuate the dispersal of power beyond the village, as seeking help from outside the village during conflicts and crises has become easier.

The gender of calling

Although the BSNL did not target women in the same way as phone managers in the Grameen Bank project in Bangladesh have done, phones are helping women extend their space and contacts in the village. Men have purchased all the mobile phones in the village, and all the shops with public phones belong to men. However, in many houses women are in charge of delivering news and operating the phone, because their husbands need to be on the road to purchase stocks or sell products. The phones are used

collectively by the entire family and even the neighbourhood. When men travel outside the village, they often leave their phone at home so that they can call home from public phones or other people's mobile phones.

Phones have increased communication between women and their natal families, although women form only a minority of the callers (29 per cent). Just a decade ago, women could be facing food scarcity, or be mistreated in their husband's house for years before the news reached their parents. Today the exchange of news is so intense that, for instance, the news of the loss caused by the hailstorm which destroyed crops in spring 2005 reached the women's parents within a few days, even if the women themselves did not call their parents.

Women's increased contact with their natal village and female relatives in other villages forms part of the broader changes evident in the village's gender relationships, the most pronounced of which are the increase in education for females, women becoming visible in formal politics, and a few high caste women taking up white-collar jobs. The decline in illiteracy has been most dramatic among the higher caste women who have gained full literacy in the 11-15 age group (see Fig. 2). This is the highest rate of literacy among any age group and is also higher than the literacy of high caste boys of the same age group (author's survey 2004).

Many of these changes have been propagated by the organized women's movement in the region. The Communist Party of India (Marxist) has mobilized rural women into women's committees. In Janta, the committee has been involved in setting up income-earning opportunities and adult education classes for women, solving family disputes and fights, forming self-help groups, and making women conscious of their rights. Instead of radical changes, many women have experienced subtle reforms in family life, to which the increase in the general standard of living has contributed. The

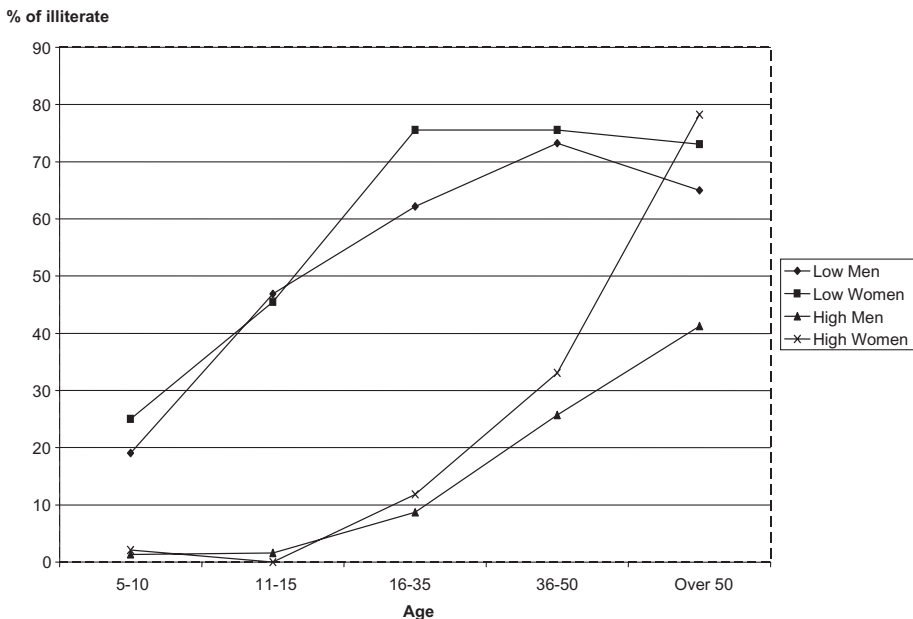


Figure 2. Illiteracy in Janta by caste and gender (author's own survey 2004).

women describe a better life as the ability to be a good family person, and to live happily in a small family group in which women can express their opinions, concerns, and wishes. The goals of freedom translate into husbands being more attentive to women's wishes by accompanying them to the cinema, on shopping trips, and on picnics to tourist sites. As a result of growing prosperity, husbands are now better able to fulfil their wives' desires (*shoks*): women can dress better, eat better, and decorate their houses. Women, who have at most realized subtle changes in their own lives, convey their determination to provide more major changes for their daughters: better education, less hard work, new job options, later marriage ages, substantial dowries – and marriages into good families.

Instead of rejecting the traditional gender and kinship code of conduct, women seek to reform it. As described above, they strive for more freedom within the confines of the home. Phones, like televisions and DVD players, help women extend their sphere unobtrusively without overtly moving out of the domestic sphere. Since natal families continue to be the major source of help for women if they are mistreated in their in-laws' house, fall ill, or face starvation, women identify the improved communication systems as playing a major role in advancing their position. Besides criteria such as a potential groom's personal characteristics and the condition of his parents' house, unmarried girls pay attention to whether the house has a motorcycle or bicycle, is close to good bus connections, and whether there is a phone in the house or in the neighbourhood.

However, women also argue that distance is required for a proper relationship between the natal and in-laws' house. They feel that distance contributes to a woman's adjustment, because problems and conflicts should be settled within the confines of a single house and not be extended to her natal relatives. Distance also sustains the meanings of kinship that upholds the honour between the two families. Women therefore find it odd if, for example, a mother calls a daughter weekly. This point exemplifies how phones extend social possibilities beyond what culture dictates as proper. As Ling (2004) puts it, mobile telephony has the ability to disrupt the structure of social interactions.

Nevertheless, contacting a daughter by phone now and then offers women a fairly non-intrusive way to stay connected, especially during the first year of a daughter's marriage – the time when mothers are not supposed to visit their daughters. Women's ability to stay in constant touch with their natal families may eventually contribute to changes in the meaning of in-laws that are similar to those that occur when in-laws live within close proximity. Women seldom get married in their natal villages, but when they do, the relationship between the bride and groom's families tends to be more casual than when there is more distance between the families.

Phones and economic transformation

The following woman's call to her brother illustrates the multiplicity of the market information that is exchanged by phone (the excerpts are from the woman's conversation during the phone call). The call lasted six minutes and is thus one of the longer calls in the sample. Consequently, the number of topics discussed is also among the highest of the sample:

I am fine, brother. My son-in-law stayed with us for nine days and did all the work. Everything was destroyed by hail. But we are all well. Bola's marriage has been arranged. He was not telling the truth

that day. He gets 11,000 and the marriage is on the 15th. Will you come? We have to go with others. We have to repay the loan from the co-operative bank. Interest is increasing by the day. Give whatever you are able to give. The more you can give, the better. Do you know where the bride is from? From Durgapur. She is beautiful. They will give earrings, a ring and 11,000. Since he liked her, the dowry they will receive will be less. What can money get, after all? He has still not come back from work. Call again next Sunday. I will wait here around seven o'clock. We are all fine. There are no problems. Sagor's uncle got a government job from the camp office. He sold the land for Rs 30,000 and with the money got the job from the camp office. Call again. Take care and stay on good terms with everyone.

Kinship relates to economy not only in that relatives offer each other loans and support during crises and that land usage follows kinship considerations. Kinship and economy are culturally constructed and symbolically related, exemplified by the giving of large dowries at marriages, which are central financial transactions in the region (Tenhunen 2008). Kin relations also facilitate market relationships. Consequently, the economic impact of these phones, which I will describe next, is linked to an intensification of kinship relationships.

My observations of the phones' economic impact support earlier research revealing the benefits of phones for small-scale businesses (Bayes 1999; Coyle 2005; Loyola 2005). It did not take the local entrepreneurs long to realize that mobile phones could help them extend their clientele. Business transactions therefore represent a major call category in the sample of calls that I filmed. Thanks to mobile phones, micro-entrepreneurs can now keep in touch with their customers, even when they are on the road or are transporting goods. In common with elsewhere in rural areas, the farmers use phones to obtain information on prices. Agricultural produce can now also be sold by phone. Whereas deals were previously closed by signing a written contract well in advance of the products' delivery, sellers can now continue haggling with various buyers until it is time to deliver the products. The prices are now settled by phone at the very last moment, which has decreased the middlemen's profit and benefited the farmers. One other obvious economic benefit of phones is that they help people save time. One need not be absent from work and travel to meet people in order to stay connected. This is especially important for daily labourers, for whom having to miss a day from work may mean not being able to feed their family that day.

A chicken farmer who lived in the only neighbourhood of the village that had electricity was one of the first persons in the village to get a mobile phone and, shortly afterwards, he also purchased a three-wheeler. These investments increased his monthly sales from 30 quintal¹⁰ to 150 quintal. He could soon invest in the village's first refrigerator, to be used for storing chickens. He also bought a colour television and a DVD player and became the first villager to obtain cable television – he now has access to dozens of channels, including Western movie channels, the BBC, and several Indian movie channels. Despite the increase in choice, villagers limit their viewing to the local Bengali and Hindi movie channels and serials.

The growth of the chicken farmer's purchasing power is a reflection not only of the impact that the phone and three-wheeler had on his business. The establishment of phone networks in the region followed a decisive phase of agricultural growth and economic prosperity in the 1980s and 1990s. Janta's small farmers and agricultural labourers all describe the past decade's development (*unnoti*) as having brought an end to occasional food scarcity and hunger. Their experiences reflect a pattern of

broader development in the state: in rural West Bengal, the percentage of poor has been reduced from 73 per cent in 1973-4 to 32 per cent in 1999-2000 (Banerjee *et al.* 2002).

West Bengal has been ruled by the Left Front and the largest left-wing party, the CPI(M), since 1977. Although most development indicators do not reflect an especially laudable picture of Left Front reforms, West Bengal achieved one of the highest agricultural growth figures of all the Indian states, 6.9 per cent in the period 1981-2 to 1991-2 (EPW Commentary 2003; Gazdar & Sengupta 1999). Before Independence, two large landowners used to own most of the arable village land, but owing to the abolition of the zamindar system¹¹ in 1955, and the implementation of a land ceiling since the 1960s, large absentee landowners disappeared and the *chasis*, or self-cultivating landowners, emerged. The Left Front continued implementing land reforms more rigorously than most Indian states. However, the plots given to landless are not large enough to support even a small family. Moreover, the great majority of the Janta landless have yet to receive their share, since the government lacks land for distribution.

In Janta, the rapid growth in agricultural production was largely due to the introduction of moderately priced movable irrigation pump sets, which even marginal and small farmers could afford. The pumps made the growing of two to three crops of rice per year possible, instead of just one crop. The number of industrial jobs has increased as well. Newly prosperous small farmers are replacing their mud houses with brick houses, and this has led to the growth of the brick industry in the region.

Economic growth, mainly derived from the extension of irrigation, has its limits; once most areas suitable for cultivation are covered, growth will slow down. Since the irrigation pump sets run on kerosene, the profitability of paddy cultivation now depends heavily on the price of kerosene, which has been rising constantly. Since the introduction of economic reforms, the ratio between produce prices and the cost of production has become increasingly disadvantageous for small and marginal farmers. West Bengal had a negative agricultural growth rate during 1998-9 and 1999-2000, while during 1995-6 and 1999-2000 it was no more than 1.4 and 1.6 per cent (EPW Commentary 2003). The rising cost of farming and the fragmentation of landholdings mean that small farmers and labouring families' children have to find jobs outside agriculture. On the other hand, the new prosperity produced by a decade of rapid economic growth has generated a surplus that, together with new consumption patterns, is reflected in the growth of small-scale businesses that utilize both public and private mobile phones, leading to an increase in rural markets' efficiency.

Conclusion

Studies of agency and technology (e.g. Hård and Jamison 2005; MacKenzie & Wajcman 1985; Nye 1995) have illustrated the diversity of agency beyond anthropological visions of practice. Even technologies emerge through choice and negotiations between social groups; they are designed in the interest of a particular social group and against the interest of others (Webster 1995). Technological change is not an independent factor that impacts on society from outside, but technology and society are mutually constitutive (MacKenzie & Wajcman 1985: 23). Phone density in rural India has risen as a result of state efforts to expand networks and competition between service providers and phone manufacturers over the rural market, which has led to decreases in handset prices and tariff reductions. Phones were not adopted by

a stagnant society, but by a changing rural society and culture influenced by such broad processes as political reforms, the introduction of new agricultural methods, and the women's movement – all processes not limited to the village but nevertheless locally articulated. The appropriations of different technological artefacts are interconnected: the adoption of water pumps helped to create prosperity and small-scale businesses in the region, activities that in turn benefited from the phones. Together with televisions, radios, and DVD players, phones offer culturally approved social alternatives and the widening of culturally constructed spheres, especially those of women.

My findings on the impact of phones in rural West Bengal show a peculiar duality. On the one hand, villagers from Janta mention having experienced the same benefits from phones, such as the ability to call for help, to save time, and to find market information, as do the villagers in such diverse places as Tanzania, Egypt, South Africa, Bangladesh, urban India, and Thailand (Bayes 1999; Bruns *et al.* 1996; Coyle 2005, Loyola 2005). In all of these places, phones are associated with a form of 'social logistics' characterized by the increased multiplicity of social contacts and market relationships' greater efficiency. On the other hand, in common with other ethnographies on the appropriation of ICTs (Horst & Miller 2005; Miller & Slater 2000), this article has exemplified how the appropriation of phones draws from local culture. Phones in rural West Bengal have accentuated kinship ties and village solidarity.

My observations raise the question: how can the homogenization of social logistics take place in the midst of cultural appropriation? In the most general sense, logistics refers to the careful organization of a complicated activity so that it occurs successfully and effectively. As a concept and a practice, logistics has evolved into a discipline that is practised in different ways and contexts, from military systems to business and event management (Langley 1986). Russel (2000) argues that the underlying general theory of logistics practices involves developing and managing the capabilities and protocols that are responsive to customers' requirements. I prefer to use the term *social* logistics because it accentuates the fact that logistics is inevitably socially mediated and is not confined only to economic life as separate from other domains of culture and society. Whether one arranges a business deal or maintains personal relationships, one has to operate within meaningful relationships within a social structure. In other words, logistical manoeuvres have to draw from symbolic systems.

Phones amplify cultural patterns, but they do so selectively. This is possible because, as Derne (2005: 46) puts it, all cultures recognize contradictory aspects of human experience, providing multiple cultural resources on which individuals can draw in times of change. Instead of travelling, visiting, and having long face-to-face discussions, phones reinforce having brief conversations by phone. As keeping in touch becomes more frequent and casual, the meanings of relationships change. The type of sociality that phones encourage depends on the number of phones: as the phone density increases, villagers share phones in smaller circles than before when there were just a few phones. Instead of supporting the power of village leaders, phones help to lessen their power by facilitating a multiplicity of relationships. Mobile technology has an impact on logistics, but not directly on cultural meanings, because similar logistics can thrive in different cultures. For instance, Ling (2004) classifies the ability to call for help as having to do with security. In rural West Bengal the meaning of this seemingly universal benefit of phones goes beyond security – it has repercussions for village politics.

The capacity of telephony to blur spatial boundaries acts as a catalyst for the reorganization and new interpretations of culturally constructed spheres and boundaries. Mobile technology encourages heterogeneity and the contest of meanings. This article reveals village sociality, kinship, and gender not only as arenas for personal strategies, but also as providing a basis for reinterpretations and critical discourses. In contrast to practice theories (such as Bourdieu 1992 [1980]; Ortner 1989; Sahlins 1987 [1985]), which have overlooked actors' critical faculties, this article points out how actors can also consciously strive for change, or show disregard for a cultural code of conduct – such as villagers who obtain help from outside the village instead of from the village leaders, or women who use the phones to broaden their culturally constructed space.

This article problematizes theories of communication technology as bringing about modernity (Giddens 1990) and individualism (Castells 1996) as well as problematizing those technology studies that have tended to emphasize cultural reproduction (Horst & Miller 2006; Miller & Slater 2000). Phones are increasing the efficiency of the market, facilitating alternative political patterns, and helping women to broaden their culturally constructed sphere, as well as invigorating kinship and village sociality. Phones facilitate alternatives, which, instead of individualism in the Western sense, represent new discursive formations. Mobile technology is a source of dynamism, albeit in a different sense than envisioned by Giddens (1990), who associates telephony with his general definition of modernity without taking into consideration the invigoration of 'traditional' networks by means of new technologies.

Telephony shapes social logistics, at the same time intensifying the ongoing contest of meanings. Instead of homogenizing cultures, mobile technology reinforces those cultural patterns and processes that can be reconciled with emerging social logistics. Like mobile phones, other information and communication technologies can be more or less intentionally developed to contain intrinsic properties which encourage logistical patterns responsive to market demands. Consequently, a research strategy best suited to understand the appropriation of ICTs is to explore how the emerging social logistics relates to local meanings.

NOTES

My research in 2005 was funded by the Helsinki Institute of Science and Technology Studies, and I am currently continuing the research as an academy research fellow in the Academy of Finland. I have presented a draft of this article in a Culture and Communication Workshop in Durban (World Congress of Sociology) and Chennai (All-India Sociological Conference) in 2006 and in several seminars in Helsinki (Agency in Technically Mediated Societies 2005, departmental seminar of Social and Cultural Anthropology in 2005, Helsinki Business School 2006, and Helsinki Centre of Economic Research in 2006). I thank the audiences for their comments. I also thank the anonymous reviewers of the *Journal of the Royal Anthropological Institute* for their valuable suggestions.

¹ Horst and Miller's (2005) ethnographic study of mobile phone usage in Jamaica differs from sociological studies through its emphasis on how particular cultures can foster different patterns of the use of similar technologies and through its description of the appropriation of phones in Jamaica in relation to local practices and categories. The authors describe how mobile phones have fed into and reinforced local practices regarding the building of extensive networks in which lines are kept open to as many individuals as possible.

² Employed by a wide range of authors, the domestication paradigm has been most notably developed by Silverstone and Haddon (Silverstone 1994; Silverstone & Haddon 1996; Silverstone, Hirsch & Morley 1992).

³ The greatest stockholder of Hutch, one of the biggest service providers of India, was a company from Hong Kong (Cheung Kong Holdings) until it was purchased by German Vodafone in 2007.

⁴ Bharat Sanchar Nigam Ltd (BSNL) is one of the largest telecommunications companies in India, covering both mobile communications and fixed infrastructure. The company was formed in October 2000 when the Indian government Department of Telecom Operations was floated as a company (Mobilecomms-Technology.com 2006).

⁵ The figure for 2005 is by the TRAI (Telecommunications Regulatory Authority of India) and for 2007 according to a recent study by the Boston Consulting Group (*Hindustan Times* 2008).

⁶ TRAI (2007).

⁷ These public phones connect wireless phones to the landline system with the help of Wireless Local Loop technology, using radio signals (cordless access systems, proprietary fixed radio access, or cellular systems) as a substitute for copper for all or part of the connection between the subscriber and the switch.

⁸ I explained my purpose to each caller and asked for permission to film the call.

⁹ Although most marriages are arranged, the village has witnessed a growing trend towards love marriages since the 1990s (Tenhunen 2008).

¹⁰ In India, the quintal is equivalent to 100 kg and is a standard measurement of mass for agricultural products.

¹¹ Zamindar refers to a landowner. During the Muslim rule the zamindar system was based on taxes negotiated between the leaseholder and the farmer as a part of the harvest. To clarify land ownership and to increase the efficiency of tax collecting, the British gave the zamindars ownership rights to the land they occupied and started to collect taxes irrespective of the yield of the harvests.

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La technologie mobile au village : TIC, culture et logistique sociale en Inde

Résumé

Dans de nombreuses régions d'Asie et d'Afrique, la technologie mobile apparaît aujourd'hui comme la première forme étendue de communications électroniques. L'auteur analyse ici l'appropriation de la téléphonie mobile en Inde, en explorant les nouvelles alternatives sociales que le téléphone portable rend possibles et les liens entre ces nouvelles constellations sociales, d'une part, et d'autre part la culture et le changement culturel. La description ethnographique fait le lien entre l'utilisation du téléphone et les autres modes de communication et avec les processus actuels de transformation. L'article montre comment l'appropriation du téléphone s'inscrit dans le contexte culturel et social local, tout en mettant en lumière la similarité entre la façon dont le téléphone facilite de nouveaux schémas de communication et les processus sociaux qui se déploient dans d'autres lieux où la téléphonie a été introduite comme première forme de technologie de communication : multiplication des contacts sociaux, efficacité accrue des relations de marché. L'auteur affirme que la technologie mobile amplifie les processus actuels de changement culturel, mais quelle le fait de manière sélective, en induisant ainsi une homogénéisation de la « logistique sociale ».

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