

# Anchored Mobilities: Mobile Technology and Transnational Migration

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## ABSTRACT

Mobile technologies are deployed into diverse social, cultural, political and geographic settings, and incorporated into diverse forms of personal and collective mobility. We present an ethnography of transnational Thai retirees and their uses of mobile technology, highlighting forms of mobility that are spatially, temporally, and infrastructurally anchored, and concepts of the house as a kinship network that may be globally distributed. We conclude in pointing out several ways in which our observations and analysis can influence design.

## Categories and Subject Descriptors

H.m [Information Systems]: miscellaneous

## General Terms

Design, Human Factors.

## Keywords

Mobility, mobile technology, transnational, aging, ethnography

## 1. INTRODUCTION

Researchers in Human Computer Interaction have shown a growing interest in recent years in global studies of personal technology use [27], use of information and communication technologies in developing parts of Asia [5], and use of ICTs in support of transnational mobility [8]. Mobile technology is particularly important in these contexts, especially as compared to more expensive desktop computers or more wire-dependent broadband internet. In a keynote at CHI 2007 Gary Marsden pointed out that while 12% of South Africans have internet access, 77% have mobile handsets. Figure 1, drawing from statistics from the 2007 CIA World Factbook [11], indicates South Africa is not the only developing nation with much higher rates of mobile phone adoption than of internet or landline use.

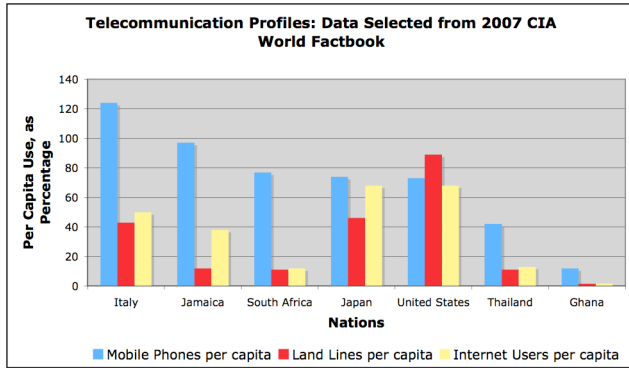
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*DIS'08*, February 25–27, 2004, Cape Town, South Africa.  
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Emphasis on expense and wiring infrastructures can prime us to view mobile technology primarily as devices that are easily mobile. Handsets are small and cheap, which to some extent explains their popularity. However, another view of mobile technology might interpret it as technology that supports people's mobile practices. From this point of view, the increasing mobility of much of the world's population is a relevant factor. In order to understand people's uptake and diverse uses of mobile technology, we need to understand people's diverse mobilities.

The study presented in this paper focuses on people who are transnationally mobile. The United Nations estimated in 2002 that approximately 175 million people, or 2.9 percent of the global population, were living outside their country of origin, up from 2.2 percent in 1965 [45]. Patterns of recurring transnational mobility are becoming increasingly common and increasingly supported by sending states [28]. Taking a broad perspective, social theorists such as Castells [10] examine the globalization of information flows and how that configures the production and consumption of commodities in the global economy. These global flows however, while manifesting as a background for social relations worldwide, also emerge as profoundly locally articulated [3]. Studies by geographers, anthropologists and social theorists on how mobility and ubiquitous information technology are appropriated into practices of governmentality, sovereignty and surveillance [37], large scale representations of space [18], or post-nation-state capitalist commodity production [17], with a focus on power relations, are all important to technology designers. Yet equally important – and what we attempt to do in this paper – is to understand the experience of global mobility, transnationalism, and information technology at the level of everyday situated practice. These practices do indeed occur against a backdrop of global economic and political forces, but the focus here is shifted. In particular we are interested in the ways that transnational mobilities bring into focus the flows that connect, rather than the economic profiles that distinguish, developed and developing nations.

In order to examine the complex interplay between technology, global patterns of mobility, and the concerns and experiences of mobile individuals, we undertook an ethnographic study of a group of transnationals who travel between Thailand and the United States on an approximately yearly basis. Our intent is not simply to identify an emerging market (though this may be one) or to show technology designers that different places, different cultures and different groups of people will use technology in different ways and have different design needs (though they will);



**Figure 1: Telecommunication profiles of several "developed" and "developing" nations**

rather we are taking a generative approach to culture, practice, setting and technology, focusing on how the meanings of these things emerge in practice. Echoing Miller and Slater’s ethnographic study of Internet use in Trinidad (and, notably, amongst Trinidadians abroad) we are interested in how people use information and communication technologies as ways to better “deliver on pledges that they have already made to themselves” [31].

Jones and Marsden [22] emphasize the need to draw understandings from real-world settings in order to design mobile systems that are appropriate to the settings in which they are used. In keeping with this spirit the ethnography presented here focuses on the mobile practices of 19 Thai transnational retirees and 4 of their children. While the specificity of this population allowed for an in-depth acquaintance and vividness of detail, we contend that some of the mobile and technological practices brought into focus by this study are not limited to this specific group of people and have widely applicable implications for design. The next section provides context for these findings in relation to existing research in mobility and technology, before describing the study itself. Our key findings center around what we call “anchored mobility” and the ways in which it constitutes a “distributed home”. We conclude with a discussion of design implications inspired by our ethnographic analysis.

## 2. TECHNOLOGICAL MOBILITY

According to social theorist Cresswell, “One of the principal ways of thinking about mobility in the modern Western world is to see it as a threat, a disorder in the system, a thing to control” [14]. Malkki [28] points out (and critiques) the ways in which mobility is thought of in terms of boundaries and their transgression, and how mobile populations tend to be portrayed as “uprooted” and potentially dangerous. Appadurai as well characterizes globally mobile people as “deterritorialized” [3]; though he avoids the trope of portraying mobile populations as dangerous he does imagine them as a transformative force. In HCI, however, the turn towards mobility has been driven not least by technological trends. Mobility has been a topic of concern for HCI design for over ten years [6]. We can think both about the physicality of mobility – the actual business of moving from A to B – but also about the sociality of mobility, the social meanings accorded to spaces and movements.

The treatment of mobility in ubicomp research often still imagines it as a problem, though the threat of chaos and uprootedness is

transformed into a dream of empowered anytime-anywhere availability. Dourish et al [15] identify several trends in ubicomp mobile systems, centered around problems of *disconnection* from stable working situations and the provision of remote access to information resources, *dislocation* and resource location or wayfinding, and *disruption* and how technologies might behave in ways that are inappropriate to their current environment. They point out another category of ubicomp research that treats mobility as an opportunity for interesting interactions rather than as a problem to be overcome. The mobilities explored are, for the most part, relatively free and discretionary, as in most of the urban computing literature. In their study of urban mobility [27] Mainwaring et al focus on how young urban professionals manage their mobility and the interfaces and resources they encounter as they move about the city over the course of the day. Besides day-to-day commutes, the three people featured in the paper visit friends in outlying cities, travel coast-to-coast for business, or work for someone based on another continent, and by and large seem to be empowered in their global and local mobilities. Yet different social groups exhibit not only different spatial patterns of mobility, but also stand in different relations of power and control over their mobility [30].

Research into residential mobility presents a contrast to the anytime-anywhere approach to mobile technologies. Shklovski and Mainwaring [38] discuss residential moves as opportunities to reevaluate one’s relationship with things left behind and new things encountered, and examine some of the ways in which information and communication technologies are used to renegotiate this balance. In their study, a residential move is a significant and potentially uprooting event, requiring acclimation to a completely new environment, whereas many transnationals move repeatedly between locations where they may have a pre-existing social network [26], or return to their once-familiar place of birth after decades abroad [34]. (Acclimation is not unproblematic in these cases, but different issues are likely to manifest.) Certainly information and communication technologies play an important role in supporting transnational mobilities, providing ways for migrants to maintain contact with friends and family at home or abroad, as well as to reach beyond their personal experience, form aspirations and imagine their relationship with the rest of the world [8, 31]. While the social context of technological mobility is a central concern in some elements of HCI research [7], these topics support further examination. We are particularly concerned here with cultural issues at work in large-scale and transnational mobilities.

## 3. TRANSNATIONAL FIELDWORK

We were interested in working with transnational retirees because of the rising number of transnationals and the role of information and communication technologies in supporting their lifestyles [8, 31]. Participants in this study represented a growing global middle class, rich enough to own homes and fly between different countries, but still watching their budget. Some support extended families who are much less wealthy and much less mobile than themselves – there is no stark division here between developed and developing world populations. Retirees in particular are an interesting population because, with a few notable exceptions [23, 48, 49], studies in HCI around older people and technology have focused largely on health monitoring and aging in place [32, 36], but older people are agents of technological appropriation in their own right. Additionally, having been transnational for decades,

they can offer a historical perspective [48] on different phases and forms of transnational mobility that they have participated in throughout their lives.

Our ethnographic study of transnational mobility was, unsurprisingly, a multi-sited endeavor in the mode of “following the people” [29]. Crucially, multi-sited ethnography, as envisioned by George Marcus, entails more than simply visiting multiple sites. Where modern ethnographies are often concerned with mapping the relationship between local experience and global structures, multi-sited ethnography as a theoretical framework acknowledges that ethnographic informants already consider their relationship to the global, and that consideration is itself an important form of local knowledge. The goal of this study is not just to present the ways in which transnational Thai retirees fit into global systems of mobility and technology, but to uncover how they see themselves fitting into it and how they act upon that knowledge. The first author, additionally, is inextricably a participant in this process of constructing and enacting a transnational Thai identity, being Thai-American herself. The fact of being implicated herself in the findings from this “halfie ethnography” [2] have inspired reflection on the conventional distinction between “self” and “other” not only in ethnography [2, 19, 39] but also in technology design and development.

Participants in this study had been born and grew up in Thailand, migrating to the United States for work, mostly through New York, mostly in their mid-to-late twenties. All had lived for thirty to forty years in the US, and currently range from their mid-fifties up to seventy years old. Amongst those who had children, those children were for the most part independent adults, or in college and living outside of the family residence. These retirees had either already established a home in Thailand or were in the process of doing so, and traveled between the two countries on a regular basis, usually once or twice a year. At one extreme, one couple participated who lived in a suburb of Bangkok for eleven months out of the year. Others split their time approximately equally, and a few others spent the majority of the year in the US and just a few months at their home in Thailand.

The first author traveled between Seattle, St. Louis, New York, Bangkok, and Chantaburi (a province of Thailand about 3.5 hours drive east of Bangkok, towards Cambodia), conducting semi-structured ethnographic interviews with nineteen retirees. She also visited participants’ homes and, where possible, stayed overnight or for multiple days. Participants were recruited by snowball sampling, so most knew some of the other participants, either from work, or school, or attending temple together. Some of the stories, then, that came up in our interview data were confirmed, or given added nuance, by being told from multiple viewpoints. All participants either worked, or were married to someone who worked, in the medical profession either as doctors or nurses and were part of a fairly large and systematic movement of medical professionals from Southeast Asia to the United States in the late 1960s and early 1970s.

Four of the retired participants’ children were also interviewed and were able to provide insights into some of the ways in which their transnationalism manifested across generations.

#### 4. ANCHORED MOBILITY

Contrary to technological visions of roving mobility, our study participants, while transnational, were not global. They traveled from node to node, their movement structured by the location of family, jobs and schools, by time, and by infrastructures.

#### 4.1 Spatial Anchorings

*[My sister] doesn't have any son. And I come from a big family, so I stay with her since I was, maybe 3, 4 years old. I started kindergarten, and I stay with her until I graduate from high school. ... so I spend at most 4, 5 years around here, the first 4, 5 years here. And then I move to [the city off] Chantaburi. And so move to Bangkok. And then the States.*

– “Kung”

Geographically, we can and do usefully talk about global cities, global flows, and regional hubs. In this study we are interested in capturing how people experience, on an individual and family level, that global network.

In understanding the experience of global flows and the spatial anchoring of our participants’ mobility, the historical context of their current situation, as they related it, is useful. Most were in the medical profession, as doctors or nurses. According to personal anecdotes, during the years that they migrated it was very easy to get a job, a visa, and permanent resident status in the US, if one worked in medicine. According to the Thai Physicians Association of America [43], the number of Thai doctors receiving post-medical school training in the US peaked in 1971 at 891. They estimate that there are now about 1000 Thai doctors residing in the United States, 400 of whom are in the Midwest. Indeed, all our St. Louis participants consisted of couples in which one or both spouses were doctors. All interviewees in NY were single nurses, or couples in which one member was a nurse. (Participants reported that wages there were higher than many other parts of the country, and that they received generous pensions.) Most participants reported coming for the work and the money, sending money back home, and planned to stay for only a few years. Once they had children, however, it became more difficult to return. Participants reported that their children were growing up comfortably and that their educational opportunities were better in the US. Thus many became citizens after having children, not just as a way to demonstrate a commitment to living in the US (thought they were indeed now committed) but for the very practical purpose of traveling more easily between the US and Thailand so their children would know their family.

A crucial element of many of these initial moves is that they were mediated by immediate social and institutional structures. By Kung’s account, his educational opportunities were expanded by his sister’s willingness to care for him and her location in more urban areas than their natal village. Later that educational infrastructure mediated his migration to the US. Medical school graduates often had advisors or professors who helped them find internships at hospitals in the US. Looking through alumnae scrap books and photo albums with participants revealed that perhaps one in four of the women with whom they had attended nursing school had ended up in the US or Australia. The very earliest movers arrived in the US without knowing anyone, but many were able to draw on the support of a social network upon arrival, and were prepared to return that support when their turn came.

*Yeah we had a ton of people staying at my house, I think at one time I counted overall at least 11 or 12 different people living at my house. ... and these were people that like lived with us for a while, like a lot of them were just my cousins that were students and stuff.*

– “Sarah”

When their turn did come, it lent a different flavor to the mobility of the next generation. With established familiar outposts in or around major US cities, in Bangkok, in smaller Thai towns, it was reported as quite common for cousins, nieces and nephews to stay with relatives in the US for school or for summer internships. With their family assured of their safety, they were able to travel to certain known places abroad at a much younger age (as young as their late teens) than their parents' generation. This node-to-node mobility works both ways; American-born children of Thai parents sometimes went "back" for extended stays. While globally mobile, the older participants in this study would probably not be considered cosmopolitan, equally at home in any global city. But their children, able to travel more widely earlier in life, more likely are.

The first author of this paper is inextricably a participant in this anchored mobility. In submitting this paper, she is an academic reporting ethnographic field-work. To her participants and her family, she participates in a network of exchange, and her safe mobility is enabled by their presence in Bangkok.

## 4.2 Temporal Anchorings

There was a temporal as well as spatial regularity to the journeys that people took. These were structured in two ways: on the one hand there were rhythms, mostly on the scale of a year or so. These rhythms were affected by governmental, educational, and legal infrastructures, as well as seasonal changes and limitations imposed by participants' health. Yearly rhythms occurred in counterpoint to shifts in mobility that were triggered by major life events and a general sense that certain activities were appropriate to certain stages of life.

### 4.2.1 Rhythms

During the time that their children were growing up, many participants reported making efforts to bring them to Thailand periodically. Summer trips "back" were commonly reported, which, due to the school year, were the only times that children could conveniently be taken for an extended stay.

On retirement, with children grown and much longer stays in Thailand becoming regular, yearly rhythms manifested a bit differently. Participants retained important ties to the US, not least because of their children, so even those who spent the vast majority of their time in Thailand traveled to the United States yearly. "Tui" echoes several others when he states that he returns "because I have a house over there I have my kids, two kids over there, those are the three things we have to go. Number one, I have, I own, house in New York. Number two, to do income tax. Number three to visit my children." The April due date of federal income taxes, for several families, structured the timing of their trips to the US. Tui notes: "Every time I go in March or April because the main purpose is to do income tax. That's why. All the time. Because the income tax is April 15." His wife adds that it doesn't hurt that April is the hottest, most unpleasant time to be in Thailand, while it's quite mild in New York.

Additionally, health issues and the need to maintain regular doctor visits sometimes limited the length of time people could spend in Thailand. With an established relationship with a doctor in the US, and not having found a new doctor in Thailand, some people balanced the options of going without medication for a while in order to be able to stay longer, but this could only be stretched so far. Yet finding a local physician as their primary care doctor

would be indicative of a permanent move to Thailand, while many saw themselves as still in a transitional phase.

### 4.2.2 Life Stage

The factors at work around medically oriented decisions to travel highlight the interaction between rhythmic repeating journeys and the ways in which participants' life stage structures their mobility.

Moves were often motivated by significant life events and age-appropriate activities. Our initial belief had been that, free from the responsibilities of work and child-rearing, transnational retirees were free to go where they pleased [49] and perhaps were nostalgic for their country or town of origin [34]. This assumption was not entirely correct. Rather, participants' responsibilities had shifted from a role oriented towards work and provision of material support, not just for their children but also for their parents and perhaps siblings, to a role that was oriented more towards emotional and practical support. A parent's or sibling's illness, in conjunction with the opportunities provided by reduced work responsibilities, sometimes triggered a shift. Whereas the demands of work and children's school schedules had once made short yearly or every-other-year trips the easiest thing to do, as people aged, a combination of factors made it increasingly feasible and necessary to split their time more equally between the US and Thailand. In that sense, it is not just an individual's life stage, but the life stages of their siblings, parents, and children – sometimes even their close friends – that come under consideration in their mobility.

In particular, participants who had just retired and were looking forward to enjoying their transnational retirement also anticipated a life stage to follow: a period of declining health in which they would become less mobile and more dependent on others. They suggested that at that time they would be forced to choose one place to stay permanently; but the choice of one or the other is not necessarily obvious. One participant, "Noi", said she preferred how "peaceful" her home in Illinois was. "Nok", on the other hand was apprehensive about aging in the US: "One special thing that we like to move here, live the life here, is, we don't like to be in nursing home over there. ... Too lonely with the nursing home there ... life over here more closer."

In this case, mobility is structured by space and time, but another overarching theme is that it is structured by considerations of which resources are optimally available where.

## 4.3 Infrastructural Anchorings

A significant consideration in the mobility of these transnational retirees, and one that they were quite reflective about, was infrastructure, though they would not call it that. Instead, time spent with them was peppered with statements along the lines of "this is how we do it here", "that is how they do it there", and "we adjust". What they adjusted to, as they regularly crossed national borders, was different legal, social, political, technological, and economic infrastructures. We construe "infrastructure" broadly, encompassing not just technological infrastructures such as GSM, electricity and sewage, but also legal standards, currency, income and import taxes, and the interpersonal networks of exchange upon with so many of our participants depended. Infrastructure, normally embedded and transparent, becomes visible when it breaks down [40], and, as in this case, when one crosses the seams between different infrastructural systems and standards. We are concerned here with the experience of crossing these infrastructural boundaries [16] and how these crossings are

exploited. Chalmers [12] suggests, specifically with regard to computing infrastructures, that “what is ‘infrastructure’ to system designers may be ‘interface’ to users” and we would argue that this statement is applicable beyond computation to the experiences of infrastructures discussed here.

#### 4.3.1 Taking Advantage of Seams

*Could you believe that I had seen more news [about the coup] in the CNN last night than in my regular [local] TV. However, the CNN was cut off from ? . So what you are seeing in the CNN is more than what I see in TV now. ... Please let me know if there is any news.*

– Personal Correspondence, September 19, 2006, just after a bloodless military coup ousted Prime Minister Thaksin Shinawatra.

This quote was a particularly poignant example of an attempt to exploit disparities in political infrastructure between Thailand and the US. Hours after last year’s military coup, local television stations in Bangkok were prevented from broadcasting any information about what exactly had happened. While family and friends abroad were calling and emailing to reassure themselves of the safety of their loved ones in Bangkok, residents of Bangkok were in turn calling on their international connections in hopes that they had a better idea of what was happening in Bangkok than they themselves did. In the months leading up to the coup, Thaksin’s controlling interest in much of Thailand’s telecom and media industry [47] had fueled a perception amongst Thais abroad (and at home) that much of Thailand’s mainstream media was unreliable when it came to political coverage. Many relied increasingly on internationally available Internet news and streaming video from sources that would have been censored on Thai network TV.

Participants were acutely aware of the differences in legal infrastructures between the US and Thailand, and frequently contrasted the two, pointing out that Thailand’s is unreliable, while the US is more “organized”.

*Ae: And they respect, you know, the people respect the law, over there.*

*Tui: Example, right, when you drive the car. You don’t go all over like that. ...like everybody do. And the cops! They ignore [it] over here.*

Educational infrastructure and economic opportunities were also regarded as superior in the States, which informed many participants’ decisions to raise their children there, as well as their relatives’ decisions to send *their* children periodically. The social infrastructures of exchange and mutual dependency, however, were regarded as significantly better in Thailand, where their networks were dense and pervasive. Hence the preference that Nok expressed to grow old there. In contrast to their concerns in the US about overburdening their friends, Ae and Tui suggest that their social infrastructure in Thailand is more robust.

*Tui: You come here you have no problem because you know why? Because this is [where they’re] born. Not, they have friends like me. They have a sister, they have a brother, they have a uncle.*

*Ae: Not only us, you know, [to] take care of them.*

These different infrastructures provide varying support for different activities and experiences. While we often experience the law, the educational system, or our informal networks of

support as a taken-for-granted background to our activities, the experience of years of back-and-forth mobility has foregrounded these infrastructures for the transnational retirees. They proved themselves quite savvy in opportunistically taking advantage of the infrastructures that best support what they want to do.

Rather than thinking about how communication technologies solve (or don’t) the problem of distance, a more productive framing might focus instead on the spatial *distribution* of the people communicating, and how certain locations can help people better fulfill a role they have taken on, or help their family, or make certain resources available.

## 5. DISTRIBUTED HOME

As outlined in the previous section, participants’ mobility had the finite character of movement from node to node, rather than the roving mobility of the “jet setter” or “road warrior”. We have already focused on the ways in which participants’ mobility was structured by location, time, and infrastructure. In this section, we will discuss the ways in which their mobility in turn structures place, in this case, domestic places.

Our discussion of anchored mobility included numerous examples of exchange, at nodes and across borders. Participants housed nieces, were housed by siblings, sent money, provided care, paid for others’ education with their US incomes, passed on information from international sources, carried dried fruit and spices from Thailand, and brand name clothes, coffee and medicines from the US. These examples of exchange, we will argue, are actions by which participants constituted a distributed home for themselves and their loved ones.

In order to make sense of this, we should first consider what we mean by “home” or “house”. As we shall attempt to illustrate in our description of the ways in which kinship, affinity, and exchange are used to create “home”, we think of the distributed home as more than just multiple residences. Rather it is a single domestic sphere that spans several different locales.

### 5.1 The Technological House

Designers of interactive systems have consistently demonstrated a concern with the home as a built structure into which sensing and computational technology might be deployed [1, 21]. Some of these projects focus on the “smart home” – that is, the home as a place that might be augmented with advanced technologies that might assist in household tasks [44], track energy usage [41] or proactively manage resources [21]. In these cases, the house is formulated as a technological infrastructure.

In contrast, others have focused on the home as a socially organized space in addition to a physical one. A series of studies coming out the University of Nottingham investigates the social and spatial organization of routine activities in homes [13] with an explicit focus on the stability and changeability of the home’s architecture. They introduce an important framing of the home as a process, rather than a static entity. Others have conducted fine-grained investigations of the orderly production of domestic routines and the artifacts involved in such production [42]. Drawing attention to the everyday social processes of households, Rode et al [35] observe domestic economies involving different skill levels with different technologies, role specialization, the sharing of public goods, and attempts to optimize technology work for the entire household.

We are concerned with the production of domestic order, but focused on families or households rather than houses as built structures. We are interested in the ways in which “the domestic” may span particular spatial locales. Our investigation troubles a geographically fixed view of the home, because in our case, the home is a moving target.

## 5.2 Kinship and Exchange

*I interview Nok and Kung at their home in Chantaburi province. Both were from that region originally, and their house, built in the last year and a half, was located on Kung’s family’s land. His brother lives close by, and there are plans for other siblings to build homes nearby in the future. They currently stay at this house for two to three months twice a year. Both have cell phones, on extended loan from a cousin, but the house currently lacks hot water, a land-line, and internet. When they settle there permanently (“someday”) they will set those things up. For the time being, Nok checks email at her brother-in-law’s house or at an internet café in town. Their orchard will soon produce an excess of bananas to share with relatives or sell at the local market. Over the course of a day, Kung’s older brother visits to help in the garden, and we in turn use his house in town as our base of operations while visiting the afternoon market. His wife provides us with a spicy crab dip. We also run into Kung’s younger brother at the morning market; later that afternoon he and his wife stop by with green mangoes and coconut. Kung’s nephew comes and goes on his motorbike several times during the day, bringing materials for the garden. They normally spend most of their time in Thailand in Chantaburi, but on this trip Kung’s sister is in the hospital in Bangkok and they are helping to take care of her. “We take turns,” says Nok. When we return to Bangkok at the end of the weekend, Kung’s older brother will come with us.*

Nok and Kung’s home life foregrounds the importance of kin and connection in constituting a home. Though not widely addressed in research around domestic technologies, house-as-kinship, expressed through transmission of names and goods, has been prevalent in anthropology, arguably even eclipsing consideration of the house as a built structure [24]. In particular, house-as-kinship is often applied to ethnographic analyses of rural communities in Southeast Asia [9]. We are wary of drawing too many similarities between studies of isolated villages in Indonesia, Malaysia and the Philippines, and a study of largely urbanized transnational Thais; however the overarching idea of *exchange* as a practice that establishes, continues, and displays kinship and closeness emerges as a common theme.

The above account of the household in Chantaburi narrates several examples of maintaining social bonds through exchange over the course of the first author’s stay: food, cell phones, labor, support during illness, gardening supplies, transportation, and computer use were all given and received. Nok’s statement that “we take turns” articulates a background assumption that favors will eventually be reciprocated. Food is a particularly significant item of exchange; to share food with others is quite literally to share the substance that composes our bodies. The experience of home as kinship then, can be an embodied, sensual experience. In this framing, home can be regarded as a process, constituted by the mobility of people and goods from place to place within a kinship network. If the *house* is taken to be a kinship group, or

family, when we talk about *home*, then, we talk about the ongoing practices by which that group binds themselves together.

The Thai word, *bâhn* (the accent mark indicates a falling tone), typically used for “house” is also frequently seen preceding village names in rural Thailand. Indeed the network of exchange we participated in in Chantaburi was spread over several distinct built dwellings, constituting something perhaps more loosely knit than a single nuclear household, but more closely knit than what one might typically term a neighborhood.



**Figure 2: Material items exchanged within a distributed household: cell phones, banned movies, green mango, and computers.**

## 5.3 The Distributed House

*“Ae” and “Tui” live in Nonthaburi, just north of Bangkok, and maintain a home in Staten Island. They bought two halves of a duplex with their friends “Ning” and “Neung”. Ae and Tui’s daughter “Tina” looks after the house on occasion; their other daughter “Helen” and her husband lived there for a while as well, in their absence. Ning also makes sure all was well, and maintains their shared backyard. Ae and Tui moved to their neighborhood in Nonthaburi largely to be near Ae’s sister, who will look after that house when they are in the US. Tina had spent a year in Thailand recently, and they kept her old cell phone to lend out after she returned to the US. They will have to buy themselves another set of phones when they return to the US in April to do their taxes, for use there.*

While there are clear practices of exchange in a house distributed around a village, once a network of exchange is distributed internationally the goods, services, and information exchanged must be negotiated at a distance, cross international borders, and interact with very different infrastructures. Participants frequently transported goods such as food, clothing, cosmetics, souvenirs, or brand-name items from one country to another, to give as gifts. These gifts now must conform to customs regulations: while dried mango may travel, fresh green mango is now out of the question. Maintaining some presence-in-absence at a home in another country, via a trusted proxy, was also common practice. Nearly every participant relied on a child, sibling or neighbor to water plants, pay bills, and keep their house safe while they were away.

Some bought houses near siblings partly for that purpose, while a few outsourced those tasks to the staff of secure condominium towers.

Over the course of this study, we observed numerous instances of participants using relatives' homes as bases of operation, either for the short term, as we did when visiting the afternoon market in Chantaburi, or for longer periods. Prior to owning their own homes, participants typically stayed with siblings when in Thailand, sometimes for weeks at a stretch. Extended stays were sometimes done to cope with difficult circumstances like an older relative's chronic illness. This is not to say that a sibling's home is no different from the home one shares with spouse and children, or that participants expressed no preference for the latter. Rather, we wish to point out that participants inhabited a network of connected places both local and transnational that could be thought of as having varying degrees of home-ness.

## 6. TRANSNATIONAL TECHNOLOGIES

The interviews in this study confirmed earlier assertions by studies of transnationals [8, 26, 31] that contemporary communication technologies allow migrants to more easily maintain links and participate in family life from a distance. People do not adopt every new communication technology wholesale, however; they are pragmatic about how it will fit into their current practices and help them accomplish things they value. Decisions to use or not use are rarely made by individuals in a vacuum but are influenced by family and friends – sometimes local and sometimes remote.

### 6.1 Pragmatic Technology

Maintaining important ties across continents was a routine challenge that participants often solved creatively and pragmatically. Participants described the prohibitive expense of both international phone calls and plane tickets when they first moved to the US. Families living in provinces far from Bangkok could not be counted on to have telephones at all. Limited to letter-writing for most of their communications, some people maintained a strict correspondence schedule; regardless of content, the regular arrival of letters indicated to family that all was well. A missing or late letter might trigger panicked phone calls to the consulate.

As much as mobile phones, calling cards that allow users to make international calls from the US for two to three cents per minute (and from Thailand to the US for only slightly more) were regarded as a boon to long-distance connection. Depending on which direction had better rates or call clarity, participants often called friends and family only to tell them to call them back immediately. Voice over IP was used less often than expected (by only one family); especially with a learning curve and a perception of possible unreliability, free communication did not seem to offer enough benefit over very cheap communication. Email was sometimes, though not always, considered worthwhile; factors in people's decision-making included whether local family members were available to help, whether remote family members used email and could read and write English, and how much difficulty was presented by the installation of Thai fonts and keyboards on their computers.

Mobile phone use was subjected to similar budgetary calculations. Some participants dropped their cell service in the United States when they began spending half their time in Thailand, claiming the benefit was not worth the extra bill. Many stuck strictly with

pre-paid plans, which allowed them to monitor their sending and take advantage of promotions; they would calculate whether promotions with very cheap rates would be worth the overhead of changing their number and informing all their contacts of the change. Every participant, however, considered mobile phones absolutely worth having when they were in Thailand, for reasons we will discuss later in this section.

**Design Implication: Don't assume that mobile users are also computer users.** Designers of mobile services often strive to integrate mobile and web experiences, taking advantage of the interactive qualities of both media. Examples of such designs might include Twitter ([www.twitter.com](http://www.twitter.com)), Radar ([www.radar.net](http://www.radar.net)), and Dodgeball ([www.dodgeball.com](http://www.dodgeball.com)), all of which offer conveniences like different views, adding of contacts, and setting of preferences on their web interfaces. For the young technophiles these systems are aimed at, this is perfectly reasonable. We would suggest a different approach for the many mobile users worldwide who use their mobile as their primary information and communication device. Designers should consider how well the features of their systems hold up for users who experience the system entirely through their mobile phones.

**Design Implication: Build for minimally functional devices.** Jones and Marsden [22] note that "if you ever wondered what happened to your old handset that was sent for recycling, chances are it is living on in a developing country somewhere." It is true that the relatively low cost of mobile devices is a factor in their adoption throughout the developing world, and indeed even very poor people will make sacrifices in order to invest in a mobile phone. For simple financial reasons, designers cannot count on having the latest feature-heavy handsets as platforms for their system designs, nor can they count on users having unlimited data plans.

The solidly middle-class participants in this study, however, actively chose pre-paid plans, and actively chose to borrow, lend, and otherwise get the most mileage they could from the handsets they had. They watched their budgets closely, not because they were poor, but in some instances because that was how they attained middle-class status in the first place. Expensive new gadgets are indeed being bought in places like Thailand, but older, more minimal handsets are being passed on, not thrown away.

M-Pay, a mobile payment system run by Ultra, a Slovenian-based company (<http://www.m-pay.com/>), is an excellent example of a mobile system design that follows these recommendations. M-pay enables people to purchase goods by transmitting payment data securely over the voice channel of their mobile phones. The system works with any mobile phone because, in terms of the technology required, it is no different from a basic phone call. Further, computer or internet access is required; users sign up with their carrier just as they would for voice service; money is deducted from users' prepaid plans, or added to their monthly bill.

### 6.2 Exchanging Technology

The prevalence of exchange here also mediates people's use of technology. Putting the borrowing and lending of handsets in context of other exchange practices emphasizes that this is not purely a financially expedient option that would be abandoned if people could better afford the newest models. The sharing of cell phones accomplishes something besides pure provision of equipment; it visibly enacts important social ties. Almost every participant reported borrowing or lending phones among family members and guests from out of the country. In fact, whether a

family borrowed their phones, or had their own plus extras to lend out, was a telling indicator of how permanently settled they were in their current location. Bell [5] infers from the fact that Singapore contains more mobile phones than residents that some people have multiple phones, but it is equally possible that *families* are keeping extra phones for the express purpose of lending them. To a lesser, but still noticeable, extent laptop and desktop computers were also exchanged among family members.

**Design Implication: Rethink “personal” devices.** HCI researchers and designers often treat mobile phones as personal devices. Systems like Jabberwocky [33] map each mobile device’s Bluetooth ID to a person: if your device has seen another device before, then the person carrying that device is assumed to be a “familiar stranger” to you. Personalizing decorations like stickers and sequins that are not easily removed assume the personal nature of mobile phones, as does as the storing of data in the phone’s memory rather than on a SIM. In some places and amongst some groups of people, these are perfectly safe assumptions, however the habits of this study’s participants show that they certainly do not hold universally.

While phones were not particularly personal devices amongst our participants, SIMs were, much more so. One person might have more than one SIM card, but single cards were not shared between multiple people. While the visible sharing of devices reinforced valuable relationships, participants did not extend this practice to the sharing of their SIMs. While some might be willing to share the contacts and applications on their handsets, we suspect it would be a good idea to give people the choice to do so or not. The hardware is available for 512 MB SIMs [50], but, to pick one example, many mobile phone models still make it much easier to save contacts to the phone’s memory rather than to the SIM.

### 6.3 Locally Mobile Technology

While participants found the local mobility of their phones to be useful (even indispensable), the transnational mobility of the device and the people who use it was more problematic. Despite the presence of a contacts list on their cell phones, many participants had not abandoned the practice of keeping paper address books. A few even kept a small one that they carried with them everywhere, along with the mobile phone. Cell phone contact lists are ill-suited for making international calls with a calling card, and this was an activity that many participants engaged in regularly. A calling card call requires first dialing a



Figure 3: Mobile phone with paper address book.

local number, then entering a PIN, and then dialing the number one wishes to reach. This sequence is not easily performed on most mobile phones. Using the contact list to make an international calling card call required retrieving those three numbers stored in the address book and then writing them all down on a scrap of paper.

The transnational mobility of the physical device was problematic as well. Finding an unlocked mobile phone that could use local SIM cards both in Thailand and in the US was not straightforward, and though some participants did it, many did not bother; instead they kept a cell phone in each country, kept a cell phone in Thailand and did without it in the US, or borrowed from relatives or close friends. The specifics of which cellular infrastructures worked in which countries, and the varying practices of services providers locking their phones from using other SIM cards, were opaque and ultimately not worth deciphering when there were other ways to deal with travel and mobile phones using their social infrastructures.

**Design Implication: Deal with users’ anchors.** Anchored mobility can provide different, and perhaps more tractable, design challenges than roving mobility. However, while some international phones and SIM cards are available (and these seem aimed at worldwide, anywhere-anytime travelers), most service plans and mobile handsets seem to assume that users will stay in one country. While a provider’s choice of network or habit of locking phones may be outside of individual designers’ power to change, some fairly tractable user interface designs could improve the global usability of mobile phones. Providing a simple way to change the county codes of groups of contacts, or allowing users to enter country information with each number and switching exit codes and country codes according to location, would greatly simplify use. Allowing users to easily dial sequences of numbers from their contact list would make that feature far more compelling to the many mobile phone users who use calling cards.

### 6.4 Mobile Phones and Social Infrastructure

*Nhu: Over here, you have to have it [a cell phone]. The traffic like this, you can’t.... It’s difficult. Over there you don’t have to have a cell phone. Over here you have to.*

*Me: What do you use it for?*

*Nhu: Everything. If I forgot something. Or I call you... where are you? I need help for the directions! And when you get shopping.*

Cell phones in Thailand, like the Internet amongst Trinidadians [31], was regarded by our participants as a natural fit for a *Thai* lifestyle in a way that is not quite true of the US lifestyle. The key to this fit lies in the differences between social infrastructures in the two locations. In Thailand, local networks of exchange were denser and more readily available, constantly in the background, an important resource for navigating the world, and a major source of authoritative knowledge. Communication technologies make that social infrastructure even more readily available, and mobile phones make it available even when one is about town, also allowing people to cope with the failures of Bangkok’s urban infrastructure that lead to chronic traffic jams. While we encountered people who had given up their cell phone in the US because they were spending less time there, every single participant in this study considered their mobile phone a necessary appendage in Thailand.

**Design Implication: Communication technologies are also information technologies.** This last design recommendation is less a recommendation about *how* to design mobile systems, and more a statement on *what kind* of mobile systems might be considered useful by people like our study participants. Bell [5] notes that in the homes she visited in parts of Asia, the Internet was little used for typical information seeking tasks like medical research or e-commerce. We suspect the reason for this is that people already find that the experts in their social networks are satisfactory and moreover, trustworthy, sources of useful information, and they can easily be reached by mobile phone.

## 7. FINAL THOUGHTS, FUTURE WORK

We have presented a situated study of situated technology use and mobility. The design recommendations emerging from it are, we believe, broadly applicable to research in the field of mobile system design. While we have already provided implications for design, it is also worth considering what implications for methods or theory may have emerged from this study.

While it is true that technology is used in different ways in different places, we chose not to present a taxonomic account of how different cultures might use technology differently. Rather we took a generative view of culture, focusing on how people actively produce it in their mobile practices, in their exchanges, and in their uses of technological artifacts. Appadurai links the global and the individual by emphasizing the role of the imagination as a way of shaping local social life against a background of globalization, often expressed through patterns of consumption. The imagination, he claims, “is a faculty which informs the daily lives of ordinary people in myriad ways: it is the faculty which allows people to consider migration, to resist state violence, to seek social redress, and to design new forms of civic association and collaboration, often across national boundaries. ... it is also a crucible for the everyday work of survival and reproduction” [4]. It is this capacity for imagination, in the sense in which Appadurai uses it, that the transnationals in our study employed in finding ways to appropriate communication technologies in support of their lifestyles, and in exploiting the infrastructural resources of their particular locality in the context of a global mobility.

Sociologist John Urry has suggested that mobility may serve as the primary analytic metaphor for contemporary sociology [46]. Sociology’s “mobility turn” calls into question fundamental notions of territory, mobility and immobility, troubling the distinction between places and those traveling through them, and calling for research investigating inter-related mobility networks and infrastructural moorings [20]. The specific ethnographic study of transnational mobility presented here applies that theoretical work on the ground. On the one hand it reveals the ways in which infrastructural moorings and cultural and personal expectations around life stage and familial roles can shape mobile practice. On the other, we see how a socially meaningful setting, in this case, home, is constructed by the mobility and exchange of people and goods, even over long distances. We believe that theories of mobilities and moorings can provide a useful analytic framework for designers of mobile technologies to understand the practices of their users. The emerging patterns and nodes of our participants’ mobilities present a jumping-off point for designers to think about mobile systems and devices in new ways.

This study was the beginning of a continuing research project. The first author is currently collaborating with Sripatum

University to conduct a ten-month engagement in Bangkok involving mobile ethnography and site-specific system design.

## 8. ACKNOWLEDGMENTS

This work was supported in part by the National Science Foundation under awards 0133749, 0205724, 0326105, 0527729, 0524033, by a grant from Intel Corporation, and by a National Science Foundation Graduate Research Fellowship Award. Thanks also to Johanna Brewer, Judy Chen, Dawn Nafus and PaPR at Intel Research. I am especially grateful to my participants, who were remarkably hospitable and tolerant, and to Prapaisri Williams, whose support enabled this project.

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