

The Space Between Mine and Ours: Exploring the Subtle Spaces Between the Private and the Shared in India

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Starting from their interactions within shared spaces and use of shared objects, to large social networks, the Indian society has developed a range of ways to incorporate subtle gestures and systems into their lives that neither forces them to share all their time and space with everyone, nor isolates them completely. This paper explores this idea that privacy is not always mutually exclusive from shared states. In the process, it highlights quality of time and space as a construct of subtle negotiations between the socially structured and personally desired. These subtleties allow Indians to design their lives around extensive grey spaces that exist in between the community and individual. This suggests some new ways for us to think about meaning of privacy, and its impact on how people in countries like India navigate complex social networks, cultural systems, and rigid social hierarchies, very often using technologies like phones and TVs.

INTRODUCTION

“What do you mean private? Do you mean like no one else knows? ... Like a secret?” As an Indian in the US, making a visit to homeland to do research, this quote from one of my field interviews was one of the first things that hit me hard, reminding me about what it was *really* like being Indian. Obviously asking a family of four that slept in one bedroom in a 3 bedroom home, about what they did in their private or quiet time or places didn’t seem to make any sense to them. And then it occurred to me, that as designers and social scientists, we have long been fascinated with phrases like “my time or your time”, “quiet time”, “my privacy”, “my home is my castle”, that we have taken these phrases for granted and universally applicable, as measures people use to differentiate the individual versus the group. The evidence for this, amongst other things, lies in the design and description of many of our technologies today. The cell phone making people “always available”, the web and wireless enabling universal access to information, passwords hiding or making information secure, cell phone family plans with each family member owning their own device, are but a few examples that have made ‘the private’ and ‘the public’ a choice between black or white.

It is critical to discuss the nature of transitions here in order to understand this state of the individual & the community, the private and the shared, in India. EPIC 2006 explored the theme of transitions. Many papers exploring transitional times and space [Ken, Rogerio & Motorola Labs] wonderfully challenged some of these assumptions above. Anderson & De Paula highlighted how corporate efforts in design and development were disproportionately skewed towards Euro-American values. They claim that transitional space and time between activities are momentary from the Euro-American point of view, but differ considerably in other cultures. This momentary space is always subject to exploration

Navigating People and Praxis

for how to increase productivity, while in it. Metcalf and Harboe challenged the notion of “always available” by describing the process of peeking and negotiating transitions between times they identified in their research. Both these papers made the case for transitions as being critical to weaving daily life activities together, as a negotiation between multiple states often determining the outcome of the next state or activity while having a meaning and context of its own. But what if the two activities before and after any given transition, are constantly in states of flux or transition themselves? What if every space is a transitional space and every time is a transitional time? What if they are not space and time *in between* but they *are* the only kind of space and time that exist?

This paper describes how the structure of life and society in India enables people to constantly stay in these different states at any given time and space. It specifically deals with space, with every space being both “private” and “public”; “mine” and “ours”. As a result, the process of performing an activity can involve constant mediation between these states. Furthermore, spaces in most homes are meant to be shared spaces, giving any family member the right to walk in at any time to do anything they please. Many families are still joint families and have been that way for many generations. The same holds true for many places outside the home. It is hence hard, to classify a space as private or shared. Over the years, Indians have developed sophisticated ways to make themselves visible or invisible depending on the context of their surroundings. This paper is an exploration of the practices of visibility and invisibility surrounding negotiation of the individual and community in the daily Indian life.

METHODS

This paper uses research from three studies: an Ethnographic research project: “Social Lives of Television” (Dec 2005), a Design Research project exploring privacy in the Indian household (Jan 2006), and a Design Research cum Focus Group testing of usages and product ideas exploring opportunities in the ‘Emerging Markets’ (Mar 2008). The three studies were conducted at various points in the last three years for different efforts exploring the place of TV and other technologies in the home. This paper analyzes research stories from across these different projects conducted in India, in an effort to explore the invisible spaces between the individual and the group, the private and the shared.

The families recruited for the ethnography research ranged between four to sixteen person households with two or three generations. We conducted in-home interviews, with home tours, and a photo journal exercise with families to explore their daily lives, the place of technology and specifically that of the TV. The men and women we interviewed as part of the design research and focus group findings in 2006 and 2008 ranged between nineteen and fifty two years. One design research session exploring privacy and practices (2006) brought together women between 40 – 52 years of age. Participants brought an artifact from their home that best represented who they were and what they wanted to share about themselves

to the group. The group then drew their ideal TV which they then used as a means to talk about existing hierarchy in the household, what they did to bypass the rules of the hierarchy, their role in the home, and the subtle negotiations they had to perform through out the day in order to enjoy what they wanted as an individual always in the midst of a family. The mapping exercise with youth aged 19 – 25 allowed them to draw connections between places, devices, and activities they performed and the people they did them with. Once again, this provided the start to a discussion around private and shared spaces and activities, and the mediation between multiple social networks. Conducting separate activities with many women in one room and with younger participants individually or in twos helped generate an honest discussion on a topic that is typically not discussed in the open. Participants were not comfortable with questions that had the word privacy in them. The society views privacy as a negative word that isolates people instead of bringing them together. Exploring practices that participants indulged in, extracting stories of identity and their role in the home, their use of technology and the importance of place and others as part of those practices helped get at conversations surrounding issues relating to negotiation of the individual and the family or society. Objects and drawings were critical as artifacts that aided in storytelling and building off on each other's stories.

Finally, throughout our research we were alert to the possibility of stumbling on larger social networks of people that would tell us stories about use of technology and content that were intentionally kept invisible by people due to fear of legal and societal issues. Shop keepers, technology repair men and visits to the illegal bazaars were all essential to understanding this landscape of use of technology. Some of the stories in this paper highlight the importance of being connected to the hidden social networks in India in order to understand the lifeline of this society.

RELATED RESEARCH

As ethnographers, designers and social scientists, we have as a group of researchers, spent much of the past few decades exploring the concept of privacy and its implications for the things we design or innovate. This has resulted in a variety of interpretations of practices surrounding privacy. Some of these studies suggest that there exist some parallels and contrasts to this notion of grey spaces in other cultures and demographics. The first set of such parallels show the presence of both private and shared spaces within one given place. Technology is used to mediate activity within the two states. March & Fleuriot's work on Girls, Technology and Privacy highlighted SMS and PC based IM as spaces that allowed girls to operate privately within the constraints of a shared place in the home. The silent nature of texting as enabling private conversations has also been explored in the context of Japanese homes where quiet interactions are expected in the small home space. The second parallel was found in Anderson and De Paula's work on the "we" affect in transitional spaces. They suggest that familiar strangers who travel together on a bus enable a collective experience that exists in a moment of group solidarity and interactivity. These people create a space in between that revolves around enjoying as a group. We found similar groups of people in our

Navigating People and Praxis

research in India come together temporarily around content and technology use. Familiar strangers are essential to fulfilling the need to share and be a part of something outside one's own family and friends. They serve as a 'public' outlet for enjoyment around content and activities that are to be kept 'in private', which means away from family. A third parallel was found in the discussions of security in HCI. Exploring privacy has plenty of implications on the discussions surrounding security in this field. Security is typically discussed as something required to safe-keep content or information, device and user identity in HCI. It has been highlighted as a barrier, a gate or a locked door that "keeps things out", specifically threats of different kinds. [Paul] In our research, keeping things out of shared devices meant mediating access between members, hiding things from being accessed by everyone that used them. The explanation went beyond just keeping technology safe from hacking, viruses and other security threats typically discussed in HCI literature. Safekeeping identity, content and material from users or those that had access to shared devices in the home, is mainstream to our discussions surrounding privacy. Privacy has also been described as possibly the greatest barrier to the success of ubiquitous computing. It is discussed as an issue that comes about as a result of wireless and everywhere computing, and a resulting fear of abuse. On the contrary to some of the notions around security in HCI and Ubicomp, this paper explores how networks and interactions everywhere across space and time with large groups of people, is used as a way to keep information secure and protected from certain people, constantly removing any source of identification.

"THIS IS OUR ROOM, OUR PC, OUR BED"

It is easy to be misled by participants who use 'we' and 'our' in every sentence in response to any question the researcher has. First impressions of an in home interview paint a picture of absolute community ownership, with no space for the individual. The existence of extensive shared spaces and objects everywhere in the home and in the way people speak about ownership, makes it an interesting place. It is ripe with constant undercurrents of tension and negotiation between shared (ideal) space and individual activity throughout the day. This section of the paper describes the physical, social and religious structure of the Indian home, highlighting the places of conflict and negotiation, and the visible and invisible practices resulting from the negotiation, that define most of everyday life for all family members.

Shruti was a 25 year old (2006) who lived in an individual house owned by her uncle in the US. She lived with her parents, her brother (21), and her two grandparents and they formed the Mani family.



Figure 1: Shruti & Family at their TV



Figure 2/ Vasa's Escape – Their PC

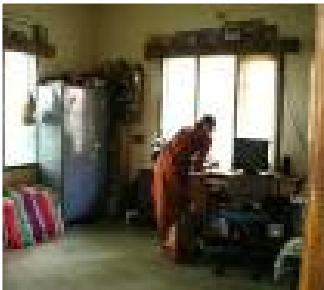


Figure 3. The bedroom where they sleep THE BEDROOM WHERE THEY SLEEP

The bedroom and the living room are where most of the activity takes place in the Mani household. The living room has the TV taking center stage for a large part of the day. It's where Mrs. Mani and her mother in law do their chores during the day with the TV on. It's where the family gets together in the evening either to watch TV or to simply sit around the TV doing their own things. The bedroom is where the parents and the children sleep next to each other. It is also where the PC, the music system, a telephone and an iPod sit. Hierarchy in the household mandates that children allow their grandparents and parents to have control of the TV on weekdays, being free to join them, watching soaps. One often notices how everyone in the living room has their own activity despite being together. The sister can often be seen sending an SMS on her cell phone, sharing the phone with her brother who also gets SMS from his friends on the same phone. The mother is seen having her attention divided between cooking in the kitchen and the TV show, the father reading his newspaper or book while peeking at the TV every now and then from another part of the room.

Vasa, the son is not a big fan of these TV shows and escapes to the bedroom during the evenings to do his homework or use the PC. The parents and the sister often have to walk into the bedroom to get some of their clothes or do some of their own activity there. Vasa keeps his door partially closed. This suggests to the other family members that he is doing his school work and requires that he not be disturbed. Other family members try to quietly walk in and out doing their chores without disturbing Vasa. The same holds true when

Navigating People and Praxis

Vasa's friends are over. The other family members will stop in the room to chat with his friends and offer them food. But the partially closed door is a request for other family members to not disturb him and his friends too much. If Vasa or anyone else is on the PC on the other hand, people freely walk in and out and peek over their shoulders every now and then to see what they are doing. If his mom notices that he is chatting with someone, she asks him who it is and joins the conversation if it's someone she has met before or if it is a relative that Vasa is chatting with on an IM. Sangeetha dictates what she wants typed and Vasa types: "Mom says hi to you". From a two way chat, it changes to a three way conversation. It is highly likely at this stage that the dad and the sister join the conversation uninvited like the mom, if the person on the other end of the conversation is someone they know as well.

This simple evening schedule and space of the Mani household in Chennai despite looking mundane and slow is filled with stories of how people mediate the private and the shared. **Firstly**, the hierarchy in the living room puts the grandparents in the center stage with everyone else doing their own activity partially involved with what is on TV. The distance from the point of control (the remote control) is correlated with their engagement in some other task.

- The ability to engage in individual activities within a shared space provides a degree of control over private space; the cell phone is an escape into the digital world of communication, the newspaper or book is a way to retreat into one's own thoughts, and cooking is a temporary retreat into one's own space.

Each family member is now readily available to others if needed and is also effectively cut off from them at the same time. This provides the individual with the power to switch between states at any point of time. Any activity can switch between shared and private depending on the flow of activities and people through the home as seen in the examples above. The flow continues and changes priority as and when needed; the daughter completes her SMS and helps the mother in setting the table for dinner. The *power to be in multiple states* within a shared space and *the ability to mediate those states* is a simple but powerful concept for the Indian families. The concept of "always available" also comes with a powerful ability to be "efficiently unavailable or private".

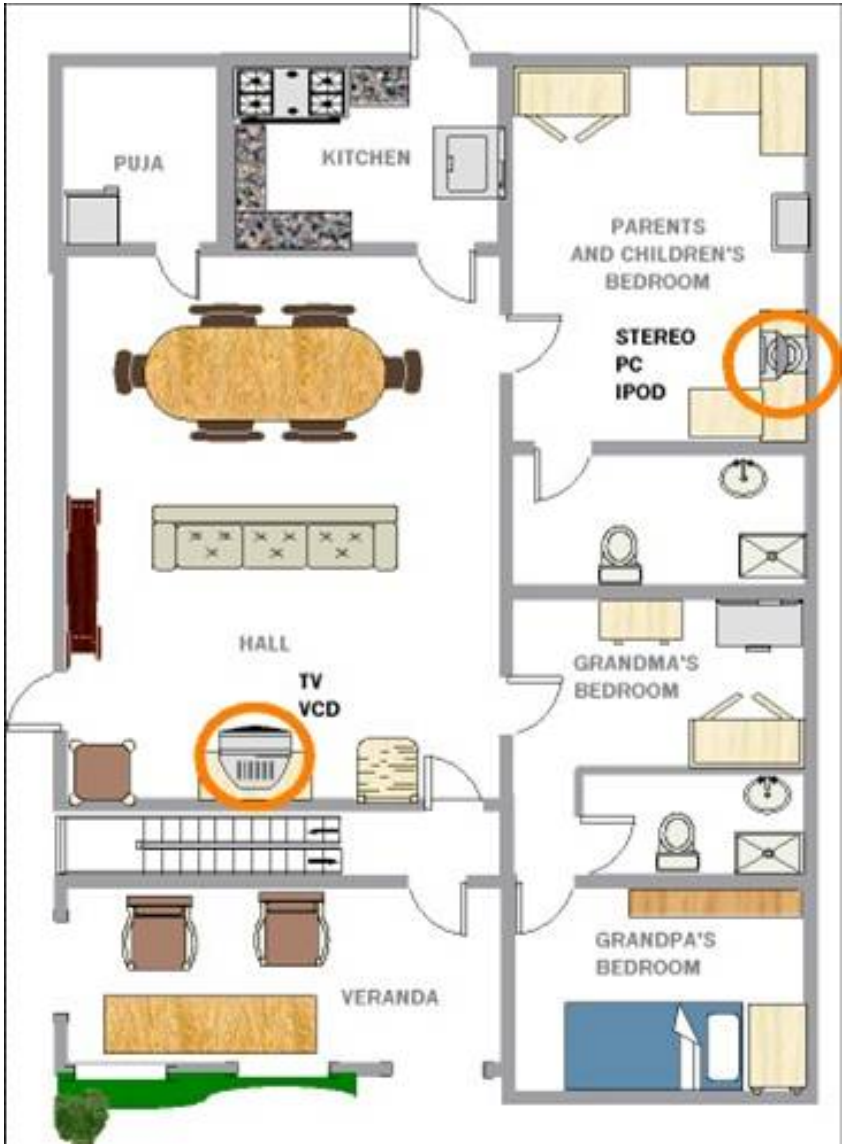


Figure 4. Home map of the Mani family

Navigating People and Praxis

Secondly, the constant flow of people and their activities in the bedroom where one main activity takes center stage during the day – typically either of the son studying, friends playing or the daughter practicing music, imposes the need for a kind of *subtle negotiation and empathy*. The partially closed door suggests “don’t enter unless you have to, my education is important but if your activity is urgent, do it quietly”.

- The subtle nature of partially closing the door is critical to providing enough scope for both the person walking in and the person inside to convey what they want, either the sense of urgency to do something or the sense of “leave me alone if you can”. The resulting action is influenced by an instant understanding of each other’s context allowing for a smooth negotiation of the individual and the shared space. The multiple sub contexts within the shared bedroom allow the son to go on with his work quietly and the mother to do hers in another corner if she had to enter.



Figure 5: Deepa on her cell phone

Thirdly, this negotiation is not always as smooth, obvious and open. Deepa, a 22 year old from another family explains how she has to alternate between tabs on her PC every time her parents enter the shared second living room where the PC was. She doesn’t want them to know who she talks to, what she talks about, or that she frequents social networking sites. She expects her parents to look over her shoulder like every other Indian parent, to participate in a chat with the person

online or simply look at what she’s doing. She has multiple tabs open and quickly presses ALT+TAB to move to another window or application. She also keeps smaller chat windows open to the right side of the screen knowing she will have time to hide them since her parents enter from the left. Similarly, Deepa and her friends always keep their phones on vibrate; this allows them to wait for an opportune moment to call back. This also means avoiding the attention of the family who might want to know who was calling, what they were saying, or if it was a boy or a girl! Sometimes she locks her cell phone with a code so that if the phone is left on the table or some other accessible location, details of who she talks to or her messages are not available for her parents to see. When asked by her parents why she needs to lock her phone, she would claim that the need for security outside home makes it the default mode she leaves it in. Teenagers and young adults have developed subtle ways to hide or keep some of their practices successfully invisible even in shared spaces. On the other hand, to ensure that she’s not alienating her family or have them suspect her, she proactively shares jokes, videos, photos and content on her cell phone with her parents everyday.

- The shortcuts and workarounds they have developed equip these groups of technology users with powerful ways to carve out their own space in the heart of social activity at home. Deepa’s cell phone story further endorses this notion of shortcuts and workarounds. They have become powerful and subtle tools that

users of technology have found to mediate their own space at home.



Figure 6. Shrini Family kids

Lastly, invisible negotiations for privacy in shared spaces are considered a privilege given by family members higher up in the hierarchy to those below them. The Shrini family is a classic example of this. Mr. Shrini, father of two sons (11, 17) explains that the TV watching rules for children are strictly enforced in his household. The boys are not allowed to watch anything Indian movie related, and only sports and cartoon shows at certain times. He knows however that his children watch movie related shows when he isn't around. "Children are allowed to deviate from rules every now and then because that's what children will do. But their respect is evident in the way they switch off the TV when they know my car gets in to the parking lot."

- Enjoying activities that need to be rationed in private is often considered a privilege that is given to children when they demonstrate responsibility. Respecting family, hierarchy and age is a key part of what is considered responsible. The notion that private space and individual freedom can be enjoyed, though within the constraints of rules set by hierarchy and the respect demanded by elders, is predominant in the Indian household. The negotiation for this space is once again, subtle and even invisible sometimes. The subtlety allows all family members to enjoy themselves within limits and even deviate from set rules in order to fulfill their need for a particular kind of space for themselves. This again, does not mean that the space is owned by the individual. It is a portion of the shared space that is given to the individual by his/her family in order to enjoy a certain amount of regulated freedom that is appropriate for their age and place in hierarchy of the home.

LEAVING HOME TO SEEK PRIVACY IN PUBLIC SPACES

It is evident from these stories above that families are perpetually in a state of sharing or togetherness while performing tasks that are highly individualistic. They have clearly developed extensive mechanisms in place for mediating ownership of objects, space and time in the home. The participants interviewed in our research told us stories that typically fell into 4 main categories that helped them mediate space; The first was sitting together to do activities, the second: sitting together but doing their own activities, third: leaving one room and going to another where you expect minimal interference and finally, leaving home to go out into the public to seek time and space away from home. The first three categories have been discussed in the section above. But the irony of leaving home for public places in order to seek privacy deserves to be explored in detail. People we interviewed were leaving home in search of an environment where freedom of action was possible and enabled them to enjoy "their own" time and space. What is evident in this process is that time away from



Figure 7. Playing at the gaming cafe

home for privacy means space to hide one's activity from people in the home. But this is invariably time spent with more people with similar interests and requirements for 'freedom'. Stories from the participants made it clear that the question of privacy is not one about individual space and time; it is an issue of deciding where something could be visible and where something had to be invisible. This space outside home enables users of technology to consume content they are not allowed to at home, to speak with people and to engage with technology in ways they would not have the

freedom to do normally. Parking lots, internet and gaming cafes, coffee pubs have hence become popular places to hang out for this reason. The goal is not to enjoy movies, music and other activities prohibited by the family in isolation in public it is to enjoy those activities with a different group of people. In other cases, the public is a trusted network of people outside the home that enable safekeeping of activities, secrets and objects like money in order to overcome the hierarchy, control and rules of members in a household.

Hemant (30) like most Indians today, watches videos, movies and listens to songs on his cell phone along with his friends. The content is stored in the cell phone's flash (memory) card. In order to ensure that other family members do not get hold of what is sometimes 'A' (adult) rated content or even simple Bollywood content they do not want their children to watch, he and his friends often hide away the flash cards with other friends. Spreading content with friends and networks was a common way to safekeep personal content. Suraj (21) often goes to the gaming café a few streets down from his house. He prefers that one specifically because people outside can't see inside.

His parents do not allow him to play games during the school year at home. He uses different excuses to leave home and uses saved up money to play at the gaming café every week with his friends in secret. Almost all the women we interviewed in a design research session told us how they stashed money away with friends and family on the outside so that they could spend it on their children or their brothers to buy them things that their husbands didn't necessarily approve of.



Figure 8. The gaming cafe

- In all of these cases, people and spaces outside the home were as critical to maintaining one's own space, as the inside of the home. The home is typically viewed as the place that protects people from shared community spaces, and in this case is treated like what we would imagine a public space to be. The public space on the other hand, viewed as open to all, provides extensive protection to the individual, empowering them with a lot more freedom than they would have within the social rules of the home. The public spaces crowded with people and activities, offers a degree of anonymity, and as a result – privacy. It was for the same reasons that participants we interviewed enjoyed interactions with strangers, shop keepers and people they didn't know creating momentary shared experiences in private and away from the home and family.

MEDIATING INDIVIDUAL SPACE ACROSS MULTIPLE SOCIAL NETWORKS AND SOCIAL SPACES

As a result of moving constantly between the home and other places in the community, there is a problem of ensuring that certain kinds of content, technology and information is accessible by only a certain set of people. And in India this means mediating between immediate family, extended family including cousins, uncles, aunts and grandparents, friends from school, college, neighborhood, dance or music classes, shopkeepers, café owners, people on the road, and people one chats with while drinking tea at a corner shop. Eventually in life everyone shares content and information with all of these people in some manner. The problem is now scaled to multiple social networks, multiple social spaces and regulating access to space and information across all of these.

Eish is a 29 year cell phone shop owner, the youngest of 6 brothers in his family and one of two unmarried brothers. Unveiling his shop and his contact opened us to a whole hidden social network system revolving around the use of technology and content. It can be seen as an elaborate system that has carved out personal space in the form of physical social networks for a new generation of technology users.



Figure 9. Viewing 3-hour movies on the cell phone



Figure 10. Loading flash cards full of movies and music



Figure 11. Showing off the flash card loaded with content

Navigating People and Praxis

As a cell phone shop keeper, Eish has setup a business that lets him sell Sim cards, new and used cell phones, repair cell phones (through his friend who owns a cell phone repair shop). But seeing that his friends and their networks of friends had figured out how to enjoy movies on their cell phone, he decided to expand his business to include selling cell phone content to his customers. Piracy of local language Indian movies is illegal and the law is being enforced to protect the local film industry in each state. This however, creates holes in the system allowing people to rip and copy all other language content freely. Using online software that allows the transcoding of video or music to a cell phone format, users transfer content to their cell phone flash or memory cards, enjoying content on the go on their small mobile screens. This leads to people trading flash cards with each other with content unavailable to others. Eish decided to plug himself at the heart of this new trend. Not only does he use his contacts to get content from online sources, he also uses his contacts in the illegal bazaars to get content that is unavailable in the local city. Using word of mouth he has spread the news of his access to content through his customers and has now become a key player as a content provider. He sells copies of the newest movies and content to one or two PC users in each neighborhood, who in turn have become content providers for that neighborhood. Local language movies, songs, new English releases, A or R rated movies all became part of this circulation.

None of the participants we had spoken to until this point mentioned any of this to us. It was clear that this entire system is below the radar, something most people know about and participate in but no one speaks about. People get their content through multiple levels of social networks. One couldn't know about these networks unless they were connected and participating as customers or content providers. "Who you know, and how you connect to them is critical to how much power you have in this network", Eish explained. This public network of mobile phone users is well protected. The content is freely available in these networks. Users didn't have to store or save the content since it was always in circulation at a very low cost. The lack of storage required in a system like this further provides the kind of privacy people are hoping for at home. One part of this content never enters the home and the other is shared together with family. One does not have to worry about being caught with inappropriate content. Flash cards are mobile and can easily be stashed with anyone outside the home; content can simply be accessed from the network, and Bluetooth and infrared communication allows an instant transfer of content for safekeeping to other cell phones. The network also has a built in security system, with lack of traceability because of the massive nature of these networks and the extent of content proliferation. This encourages users to freely participate without fear of being tracked down. After initially being surprised to hear of how many flower and vegetable vendors on streets were content providers, we eventually understood that it was this nature of informal networks, the subtle communication, the access to know-how on where to go and what to find, that make this system so efficiently private and shared at the same time.

One set of the teenagers I interviewed explained how they upload some of the content that is costlier into online storage sites. The web is being used as a way to store content privately away from the family. Storing content on the computer increases the scope of

parents discovering their children watching movies and songs during the school year. So just like leaving home is one option to create a space for one's own activity, these cell phone users are using the internet as another way to stash their content away privately. There is constantly a need to manage what comes into the home, leaves the home, what is available to family or to different networks of friends. The web in this case, is hence being used to keep information secure and safe which is contrary to the way the internet is typically spoken about – as open for all with no safety of privacy. The ability to use the internet as a place to hide information from those that are not proficient at using the internet makes it safer than any other solution for these participants.

LIVING IN A SOCIETY THAT SAYS PRIVACY MEANS YOU HAVE SOMETHING TO HIDE

Language can be useful when trying to understand how people perceive concepts. The fundamental need to do such extensive mediation at every place in the Indian society we have seen is a result of shared ownership of spaces and communities. But social taboos make it even more difficult to manage this mediation process. Below is a set of quotes collected from our in home interviews that reflect some of the notions surrounding the word privacy in the Indian society.

"Every time we go to the US to visit family, we have to sleep in our own room. Everyone has their own room; we all don't talk through the night and sleep together in one long room anymore. All that's gone now in the name of privacy"

"What do you mean privacy? With a house full of kids and in laws, that would be abandoning my duties"

"My parents will kill me if I tell them not to touch my things because I wanted privacy. In fact they'd figure out I was doing something wrong if I said so. So I can't be that dumb and put myself in trouble. In fact, I almost always share stuff on my cell phone with them to make sure they don't think I'm doing things I shouldn't be doing with my cell phone"

In all of these 3 examples, privacy is described as something wrong, as isolating, rude, anti-social, selfish, taking time away from family and duties and as something required when one needs to hide something or is doing something against commonly accepted rules. The language surrounding the word privacy is extremely negative. Locked cell phones, alternating between tabs and windows of browsers to hide one's activity, keeping doors partially closed so that people wanting to hide or engage in a private activity can hear when they creek open, deleting history of search, calls and website links from cell phones and PCs, leaving home to seek privacy in public spaces are all intelligent workarounds that the Indian people have learnt over time to negotiate privacy in their shared spaces.

Navigating People and Praxis

As mentioned before, Indians almost always answer questions starting with 'WE' and never talk about just themselves. They ensure that they talk about other people doing the same things that they do. The sense of togetherness and community allows people to justify their actions as being acceptable and common. This also explains a large portion of why people prefer escaping into public or shared spaces in order to mitigate the effect of pursuing private activities.

This is also why technology and specifically mobile technology is successful in India. It has provided an appropriate retreat for its users from this predominantly social community of people. The flexible nature of the networks, shortcuts and workarounds that people have created using it, have supported the key theme of subtlety that seems to be integral to every Indian.

THE ROLE OF MEDIATED SPACES IN TECHNOLOGY DESIGN

I stumbled across the significance of this particular research theme earlier this year, from research projects conducted over the past 3 years. My current explorations of the life and practices in the emerging markets and the design of product concepts for them led to the direct influence of these findings on product concept generation. In this conclusion, I share the implications of these findings on the design of products and services for the Indian market.

- First, constant movement between different rooms in the home seeking space away from the immediate shared activity turns people towards rooms where other relevant technologies are present. TV tuner cards for PCs are becoming increasingly popular in the Indian market. The single shared TV often placed in the living room is being compromised by those further down in the hierarchy in favor of PCs with TV tuner cards, mobile phones or MP3 players. With rapidly growing disposable income to add to this state, the middle and upper class communities are now looking for new ways to embellish their home with technology as a way to make the most of their negotiation of individual and shared space. Music players in the kitchen are another example. This device allows the women to follow their religious chants and prayers in the morning while cooking at 5.30 am, long before any one else in the house wakes up. This removes any dependence on the PC or the bigger music system usually placed in the shared bedroom of the house, not usable until the rest of the family wakes up.
- Second, multi functional devices in the home that provide redundancy and overlap in compelling features like providing TV / movie content across the house are viewed as highly valuable. With most activities happening in shared settings, the ability to do anything one wants and not be limited by the few specific functions of each separate category of device is desired. Multi purpose devices are hence preferred over single purpose devices. On one hand, they are perceived as more value for money and on the other, they are viewed as conducive to choosing any

function or application that they are deprived of when family members are using other similar devices. The need for new categories of devices beyond the PC, the mobile phone and other consumer electronic devices we know today that fit this profile, which blur to the center of specialized categories we talk about today should drive innovation in this space. All product concepts that were designed using this principle tested high in our research.

- Third, similar devices owned by each person in the family are still viewed largely as indulgent and private (selfish, extravagant etc.). Product concepts that were built on a model of centralized shared resources in the home with autonomous end units floating tested the highest in our concept testing research sessions. Centralized shared resources of any sort were considered easier to manage from financial and social perspectives. Individual autonomous units that were tethered to the central point reflected the same notion of the individual and shared spaces that we noted in our exploratory field research. They gave individuals the ability to use their own technology while knowing that they could be shared if needed. Participants even envisioned the use of one set of individual units that would be owned by all as common resources for use in the home, and each member would still be able to have one end unit that they could call theirs and maybe even take it outside the home as appropriate.
- Fourth, mobile applications are critical to this community that is constantly on the move between rooms in the home and different places outside the home. There is a deeply felt need to take content from one device to another when shifting between different activities, different social networks and spaces for the reasons mentioned above. Mobility is power to mediate access and privacy between different people and places. With broadband and wireless networks still at their infant stages in the country, people do not expect to make seamless transitions of their digital content without their flash cards, CDs or USB pins. Innovations in connectivity and device networking will be critical to empowering these mobile communities. People are tired of waiting for centralized infrastructures like broadband connectivity to fall in place. Innovation in this space should consider the success of the mobile infrastructures and make use of similar patterns in the market.
- Fifth, as seen in most of the research findings described above, social networks are critical to access and mobility which enable space mediation and ownership. Technology is increasingly playing a big role in enabling social networks of various sorts, particularly surrounding content sharing. Networks are key to safe-keeping, information sharing, access, power and identity. Enabling peer-to-peer applications, intelligently integrating networks as parts of business models and content provision will be critical to the technologies we design.
- Next, mediating access to content in subtle ways will be the key to success of any new innovation in technology. Passwords, logins and other obvious ways to demarcate ownership as seen in the examples above, violate social and cultural rules that look upon privacy as a negative concept. With multiple social networks and the

Navigating People and Praxis

need to regulate access between them, this will certainly be a challenge and an opportunity to create value.

- The CHI community has long explored contextual awareness and pattern recognition that use past usage patterns to predict future actions and provide recommendations. Proactively suggesting solutions or giving recommendations might reveal activities of people with one social group to another. If such information is accidentally revealed across these social networks, the user is presented with the problem of no privacy. Inappropriate content shared with friends might show up as recommendations for sharing when sharing a certain kind of content with family on a mobile phone or TV, for example. Innovation in device and system intelligence should consider the nature of sharing as one that happens across networks and the nature of devices as partly private and partly shared in order to cater to a market like that of India.
- These findings also have extensive implications on the way we think about security. Most discussions in CHI Community interpret security as fear of threats from unknown sources online and on networks. While this maybe true in many countries, security in India is interpreted as safekeeping and mediating access between groups of people. Security and privacy cannot just be explored by looking at what needs to be hidden and who's attacking whom. We need to understand the implications of space and time and the invisible actions that happen within them. Be it parental controls, importance of the network in safekeeping content, uploading content to the internet to hide it from the known people – many of these exist in contrast to most accepted definitions and understandings of security. Looking at this breadth of interpretations of security can help us enrich the security and networking solutions we design for this market.

ACKNOWLEDGMENTS

I thank Alexandra Zafiroglu, my research partner in the ethnography project “Social Lives of Television”. Many thanks to UEG, Dr. Genevieve Bell, Michael Payne and Francoise Bourdonnec for helping us pioneer the emerging markets initiative and strategy work within Digital Home Group at Intel.

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