

## INVESTIGATING MOBILITY, TECHNOLOGY, AND SPACE IN HOMES, STARTING WITH “GREAT ROOMS”

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*Certain American-style homes include large multifunctional spaces, often with vaulted or otherwise high ceilings, that incorporate living, dining, and kitchen areas. As an American cultural phenomenon, these “great rooms” symbolize and instantiate a particular vision of the good life or ideal home, including for example concepts such as openness and togetherness, or in less favorable interpretations, wastefulness and lack of privacy. As such, we see great rooms as complex and contradictory symptoms of unresolved tensions in the politics of everyday life. We describe our approach of starting with a provocative and problematic topic within a larger domain of interest and examining it from a number of perspectives. We argue that sites that are contentious are particularly interesting candidates for technological innovation, in which technology is not limited to assimilating to well-established and understood processes, but rather can participate in an ongoing process, responding to and challenging concerns.*

Be not afraid of greatness: some are born great, some achieve greatness and some have greatness thrust upon them.

William Shakespeare, *Twelfth Night*, Act II, Scene V

## INTRODUCTION

Over the last decade, homes have attracted considerable interest from the information and communications technology (ICT) industry as a domain for substantial growth and innovation, as information-intensive workplaces had previously. But in addition to opportunity, homes also present daunting complexity and barriers to ICT adoption (Hindus 1999). New technologies can help overcome some of these, as when low-cost wireless networking systems like WiFi allowed provision of broadband connectivity without the huge cost of wiring (or, worse, re-wiring). Indeed, one important way of looking at homes is in terms of infrastructures that both facilitate and limit technological

deployments (Brand 1994). Nevertheless, no single approach to homes is sufficient. Their complexity calls out for multiple perspectives and methodologies. In addition to being co-evolving sets of technical infrastructures, homes are also architecturally designed complexes of connected spaces (Hanson 1999); stages or sets on which interpersonal relations play out and are organized (Hughes et al. 2000); political assertions in favor of, intolerant of, or ambivalent towards certain ways of living and certain social relations (Chapman and Hockey 1999); and fields of rules and norms emerging from their inhabitants as they work out how to live together (Wood and Beck 1994), to list but a few fruitful ways of approaching the domain.

With these concerns and interests in mind we set out to conduct an exploratory ethnographic study of the use of wirelessly networked notebook PCs (WiFi laptops) within homes. We visited six households in the Portland, Oregon and San Francisco Bay Area, California metropolitan regions; a small sample, but each household was studied in some depth, through diary keeping, observations, interviews, activity mapping, and time-lapse photography. Space here does not permit a full report on this research and its findings. Rather, for this short paper we will primarily reflect upon our approach – the reasoning behind it, some general themes it uncovered, and how it might generalize to other domains. In short, our approach was to start with a provocative and problematic topic within the larger domain of interest, to examine it from a number of perspectives, and to consider what different paths lead away from it into that larger domain. In our case, the domain was in-home use of mobile technologies and the topic was “great rooms,” but we believe this kind of approach could be usefully employed for other complex domains as well.

## GREAT ROOMS

*Great room* denotes a category of architectural space within certain American-style homes centered on a prototypical image: a large multifunctional “family room” often with a vaulted or otherwise high ceiling. *Home Magazine* elaborates, in a how-to article on designing and furnishing such spaces:

A well-designed great room really lives up to the name, combining the kitchen, eating area, and family room into a smooth-running hub of the home. But the same qualities that make great rooms so popular—service, versatility, comfort, and generous dimensions—can also raise some tricky design issues. (Home Magazine N.d.)

From even this brief introduction to the term a number of contrasting features can be discerned. Great rooms are about composing previously isolated, and better defined, spaces into something new but “tricky” and not immediately understandable. (Conceptually, ICTs can be seen to do something similar – see Meyrowitz 1986.) They are touted as “popular,” praised in both experiential and efficient terms, but are also presented as risky and needing to be “well-designed”. They are a mixture of both solution and problem.

The term *great room* is not neutral, well-defined, or even in common usage (not even, we found, among people who have and use them). The spaces described by this term are found in only a small minority of dwellings, even under the loosest of definitions, and in their most developed form only in a certain genre of recent, upscale construction. It would seem then a curious starting point, but we

found the term and the kind of space it describes fascinating and relevant to our research topic for a number of reasons.

### The Greatness of Great Rooms

Some of these reasons were purely pragmatic. For example, from the standpoint of mobile technology use, large spaces such as great rooms are interesting if for no other reason than that they offer room to move, to gather together, to separate, to subdivide. They pose spatial questions, both to their users, designers, and analysts, about what and who goes (and belongs) where. In thinking about wireless laptops, we wondered whether they would make their way into great rooms and freely move about, untethered, or become fixed to particular zones as if furniture. And we found that laptops were indeed used in all of these ways, but only in certain zones such as kitchen counter vs. dining table vs. couch, and often in highly constrained, nuanced, and territorial manner.

But the great in great room refers to more than just large amounts of space – it also refers to luxury, to grandeur, to hedonic experience. We became interested in what makes a great room great, and the roles ICT has or could have in this regard. Books promoting great room design and decorating often depict big-screen TVs and home theatre systems as part of their luxury appeal, and we could imagine great rooms being used as a kind of technology showcase. But other technologies, we thought, might be seen as a threat to luxury, or at least to the intended experiences of immersive enjoyment – particularly devices like laptops, which often have carried a workplace connotation.

### The Trouble with Great Rooms

As we began to read more about great rooms, and to discuss the project with colleagues and other researchers, we quickly became aware of the problematic cultural or symbolic meaning of great rooms (in addition to their troublesome nature as challenges for design). Our proposal to study them was sometimes misinterpreted as an ill-conceived endorsement, or unreflective U.S.-centrism. This only intrigued us further, as it suggested there were important underlying tensions implicit in the idea. As an American cultural phenomena, great rooms symbolize and instantiate a particular vision of the good life or ideal home – or rather, a recent incarnation of an old, perhaps even medieval, vision (McCracken 2004). What this vision consists of is hard to pin down exactly, but at the very least it includes openness and togetherness – or, from a critical view, wastefulness and lack of privacy.

**Wastefulness** – Great rooms, at least in their fully realized, two-story, big-windowed versions, conspicuously consume space. They take considerable resources to heat, cool, clean, furnish, and maintain. They use for one room the space of what could be two stacked single-story rooms. This can be rationalized as economical in yielding a smaller square footage of floor space (and an associated reduced property tax burden, as one participant explained), but perceptually the experience of their large scale is hardly one of efficiency. The ideal of bigness and acceptance, indeed celebration, of wastefulness is often seen as a central component of mainstream American culture of super-sizing, Hummers, and “McMansions” – and one that through forces of globalization is threatening to spread (Collier 2005).

**Invasiveness** – In addition to expressing an ideology of bigness, great rooms also express an ideology of family togetherness (Leavitt 2002, Madigan and Munro 1999). They represent a tradeoff of privacy for connectedness and publicness – a tradeoff the implications of which may not be born equally by men and women, or by adults and children. In terms of internal connections, in addition to

being itself a capacious gathering place, the great room is often topologically a central hub, visually and acoustically well-connected to the other spaces in the house. In terms of external connections, unlike a traditional American den or family room relatively removed from the public gaze of visitors upon entrance to the home, great rooms often comprise this public zone of reception, entertainment, and display. Thus, great rooms are open to the same sorts of criticism that *The Feminine Mystique* leveled against the open-plan ranch or split-level houses of 1950's America:

*There are no true walls or doors; the woman in the beautiful electronic kitchen is never separated from her children. She need never feel alone for a minute, need never be by herself. She can forget her own identity in those noisy open-plan houses. The open plan also helps expand the housework to fill the time available. In what is basically one free-flowing room, instead of many rooms separated by walls and stairs, continual messes continually need picking up. A man, of course, leaves the house for most of the day. But the feminine mystique forbids the woman this.* (Friedan 1983:246).

Although the homes we visited have true walls and doors, and cohabitants all of whom leave for much of the day, the gist of Friedan's argument remains intact, and questions of privacy, identity, and great rooms complex and unsettled.

## IMPLICATIONS FOR TECHNOLOGY DESIGN

But why should these political and cultural issues around great rooms, however interesting from the standpoint of social science, make them interesting from the perspective of ICT research and development? We think there are at least two arguments to be made in this regard.

### Going with the Flow, and/or Counter-Flow

First, issues such as bigness/wastefulness and togetherness/invasiveness – and the underlying cultural conflicts of which they are symptomatic – can directly affect the success or failure of particular technologies in this domain. Technologies could be designed to take advantage of cultural currents, such as cults of immersive bigness or family togetherness, or to serve counter-trends such as “not so big” homes (Susanka 1998) or “living together apart” arrangements (Levin 2004), but only if these currents and their eddies are understood as they play out in practice, not just in theory. Often both trend and counter-trend are active at once.

For example, while most of the households we visited all aspired to a goal of togetherness and did use their great rooms to achieve this in everyday life, it would be a mistake to assume (and to design technology that assumes or requires) togetherness in the great room takes the form of joint, focused engagement in a shared activity. Such activities did occasionally take place, but the keyword here is occasion – the special TV show, the spontaneous Monopoly® game. Much more frequent was hanging out together, each individual in their designated spot, each engaged in their own activity, but aware of and enjoying each other's presence. Such awareness, and the flexible boundary management it affords, would seem a promising direction for new technology.

## Engaging Unsettledness

Second, we think unsettled domains, such as great rooms, may present opportunities for ICT adoption not despite their unsettledness, but because of it. Some, perhaps even most, sites of potential technological intervention may be fairly static and mature, well-understood by a large consensus of their various stakeholders – users, designers, regulators, vendors. In these cases, the primary problem of technology design would be one of assimilation: fitting in. Even in more dynamic or immature contexts, this is not a bad heuristic – certainly better than supposing people, institutions, and environments will adapt to whatever technology is made available or deployed.

But we would like to suggest that in many cases there is not a well-defined or objective domain for the technology to assimilate to, that the role of technology is not to provide an answer to a well-posed question, but to participate in an ongoing process, responding to and challenging concerns, not just “solving” them. (In discussing processes of continual refinement and artful design in the home, Taylor and Swan (2004) espouse a similar approach.) The goal in such cases would still be to fit in, but to fit into a messy, dynamic process, and not necessarily in an unambiguous or uncontentious way. For some technologies, there may be more opportunity to engage a domain when it is in dispute, rather than waiting until it becomes better, and perhaps more narrowly, defined.

An illustration of the potential virtue of unsettledness from our field visits is the way that laptops had managed to make their way into the great room, though not without some degree of discomfort and tentativeness. Perhaps at some future point, great rooms will have more well-established norms for what is and is not permissible in them, and laptops (or more specialized successors) will clearly either fit or not fit into this worked-out schema. But at present, we found the fit between great rooms and laptops to lack this kind of clarity, and potentially to the technology’s benefit. In some of our households, laptops were not allowed to be *based* in the great room. Nevertheless, all our households allowed laptops to be *used* in the great room, to fit into one of its multiple (and often conflicting) purposes. And indeed laptops could be left there for long periods of time, since, we think, they could be “tidied up” and returned to their rightful home base, in the office or bedroom, as required. This “welcome but don’t stay” policy on laptops may not be stable in the long term, but it did appear to be working in practice.

## More Workable Unsettledness: Great Rooms as Workplaces

This discussion of laptops in the great room naturally leads to one of the main themes that emerged from our observations and conversations in all of the homes we visited: the great room as a work space. Great rooms, even those incorporating a kitchen (Bell and Kaye 2002), were not primarily about work and productivity; they were about pleasure and sensory experience. Regardless of the presence or absence of technology, great rooms were valued as pleasant spaces to enjoy, in terms of light, space, views, décor, unclutteredness. All of these attributes were sources of luxury and delight. For many of our households, their plush couches and comfortable openness made them lovely places to take a nap or otherwise just spend time.

But these hedonic aspects and uses did not preclude great rooms from being used as workplaces as well. They were often sites of individual, solitary work, be it folding laundry, working on a school assignment, or wandering about with cordless telephone and muted headset on a conference call meeting. They could be briefly taken over for a project – from homework to laundry folding, with space to spread out materials – though rarely could they function as a project room, in a persistent

state of clutter and “work in progress.” In part this was because they were public, social, connected spaces: they could be used for work, but only when consistent with this more fundamental property.

They were thus, unsurprisingly, valued as sites for working while in the presence of others, in a kind of social-multitasking or “being alone together” kind of mode. This generalized somewhat to more tenuous sorts of social presences, ranging from being able to hear the presence of others in the households behind their closed doors, or being kept company by people on the TV, or even just feeling connected to the outside community by looking out into and hearing the surrounding environment. For those who worked at home, it was a welcome relief from being cooped up in their home offices, sitting at their desktop PCs.

Just how much a great room could be a work room was by no means a settled issue in the households we visited. Great rooms were part of a larger system of workplaces, with other nodes in home offices or bedrooms. Significantly, these other locations offered affordances that were perceived as unavailable in the great room, notably privacy and project space to spread out materials and leave them for extended periods.

Work technologies could be brought into the great room and used there, but their being based there was far more problematic; it was as if this threatened to officially make the space a workplace, on the record so to speak, not just off it. We would predict that great room furniture and design will evolve along similar lines, allowing for work but only in reversible or unofficial ways – as was the case of a coffee table, demonstrated to us with pride, out of which a cantilevered desk surface could emerge, but be retracted and hidden when finished. The whole issue of ICTs allowing the workplace to move into the home, and creating obligations by workers (and their families) to repurpose and multi-purpose their dwellings, is only just beginning to be felt, and great rooms are a space where we would expect to see this culture’s conflicts in this area play out.

## FUTURE DIRECTIONS

Many research directions lead from the topic of great rooms. They are surely just one example of a larger class of various new multipurpose public/private spaces, creating unsettledness at different scales and in different cultures. They raise questions about the trajectory of the housing industry and the spaces it produces and markets, and of the social norms formed in response to new types of home spaces, activities, and technologies. They call attention to the experiential delight of openness and connectedness, and its contrast with (as well as potential enhancement by) most ICT-based experiences. But they also call attention to the ecological damage and potential behavioral coercion that can be caused by infrastructural choices, and the potential for ICTs to mitigate as well as exacerbate these effects. Finally, we hope this discussion of great rooms as a starting point for research serves as a useful illustration of a research style that looks for, rather than avoids, trouble and ambiguity.

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## REFERENCES

- Bell, Genevieve and Joseph "Jofish" Kaye  
2002 Designing Technology For Domestic Spaces: A Kitchen Manifesto. *Gastronomica* 2(2):42-62.
- Brand, Stewart  
1994 *How Buildings Learn: What Happens After They're Built*. New York: Viking.
- Chapman, Tony, and Jenny Hockey, eds.  
1999 *Ideal Homes? Social Change and Domestic Life*. Tony Chapman and Jenny Hockey, eds. Pp. 61-72. London: Routledge.
- Collier, Robert  
2005 The Good Life Means More Greenhouse Gas. *San Francisco Chronicle*, July 6: A1.
- Friedan, Betty  
1983[1963] *The Feminine Mystique*. New York: Dell.
- Hanson, Julienne  
1999 *Decoding Homes and Houses*. Cambridge, UK: Cambridge University Press.
- Hindus, Debby  
1999 The Importance of Homes in Technology Research. *In Cooperative Buildings - Integrating Information, Organizations, and Architecture*. Proceedings of the Second International Workshop (CoBuild'99), LNCS 1670. Norbert Streitz, Jane Siegel, Volker Hartkopf, and Shin'ichi Konomi, eds. Pp. 199-207. Heidelberg: Springer.
- Hughes, John, Jon O'Brien, Tom Rodden, Mark Rouncefield, and Stephen Viller  
2000 Patterns of Home Life: Informing Design for Domestic Environments. *Personal Technologies*, 4(1):25-38.
- Leavitt, Sarah A.  
2002 Togetherness and the Open-Space Plan. *In From Catherine Beecher to Martha Stewart: A Cultural History of Domestic Advice*. Chapel Hill, NC: University of North Carolina Press.
- Levin, Irene  
2004 Living Apart Together: A New Family Form. *Current Sociology*, 52(2):223-240.

- Madigan, Ruth, and Moira Munro  
1999 "The More We Are Together": Domestic Space, Gender and Privacy. In Tony Chapman and Jenny Hockey, eds. *Ideal Homes? Social Change and Domestic Life*. London: Routledge. pp. 61-72.
- Meyrowitz, Joshua  
1986 *No Sense of Place: The Impact of Electronic Media on Social Behavior*. Oxford: Oxford University Press.
- Susanka, Sarah  
1998 *The Not So Big House: A Blueprint for the Way We Really Live*. Newtown, CT: Taunton.
- Taylor, Alex S. and Laurel Swan  
2005 Artful systems in the home. In Proceedings of the SIGCHI conference on Human factors in computing systems (CHI 2005). Pp. 641-650. New York: ACM Press.
- Wood, Denis and Robert J. Beck  
1994 *Home Rules*. Baltimore: The Johns Hopkins University Press.

### **Web resource s**

- "The Great Room Made Better," *Home Magazine*,  
<[http://www.homemag.com/article.asp?section\\_id=9&article\\_id=237](http://www.homemag.com/article.asp?section_id=9&article_id=237)> (15 April 2005)
- Grant McCracken, "Trend Watch: The Great Room," *This Blog Sits at the Intersection of Anthropology and Economics*, 19 October 2004  
<[http://www.cultureby.com/trilogy/2004/10/trend\\_watch\\_the.html](http://www.cultureby.com/trilogy/2004/10/trend_watch_the.html)> (20 October 2004)